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- Top Intellectual Property Attorney
- Areas of Practice:  
Patent, Trademark and Trade Secret Litigation, Patent Preparation and Prosecution, IP Transactions, IP Valuations and Financial Modeling
- USA based

**VISITS TO NEW ZEALAND:**

For more info on Dale contact Sandra Lukey, SmartNet, (03) 3667 874.



Licensing Experience  
Legal Experience  
Investment Banking  
Experience  
Education

Professional Activities  
I. Representative legal work  
II. Representative Clients  
IV. Professional and Civic Activities

**Profile**

Dale Hogue has practiced intellectual property law in Washington, DC since 1972. He joined Womble Carlyle as counsel in the Technology & Commerce Group focusing on its EE/computer patent practice based in McLean, Virginia.

Dale has particular expertise in software, algorithms, telecom, e-commerce and electronics, as well as the protection of financial service inventions and human interfaces. He has litigated patent, trademark, trade dress and trade secret matters. Dale's practice includes patent preparation, prosecution and interferences. He has managed international patent prosecution and litigation matters.

Dale assists patent owners in licensing, selling and valuing patent portfolios. He has assisted major corporations in extracting value from

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their intellectual property assets.

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## **Licensing Experience**

- Licensed intellectual properties (IP) including patents for financial systems and software, software applications, pharmaceuticals, electronics, copyrights, trademarks and trade secrets.
- Advised on organization and strategy of licensing department.
- Assessed and valued IP.
- Maximized IP value.
- Performed IP due diligence.
- Sold patents.

## **Legal Experience**

Litigated intellectual property rights, IP strategic planning, client counseling, product clearances, drafted and negotiated licensing agreements, practice before the United States Patent and Trademark Office, and advised on foreign intellectual property rights.

Technical expertise in algorithms, software, business systems, Internet, telecommunications, electrical, pharmaceuticals, medical devices, mechanical, aerospace, automotive, and sensors arts.

## **Investment Banking Experience**

- Advised on the formation of technology joint ventures and assisted in the negotiations.
- Member of an investment committee in a technology holding company acquiring IP based companies.
- Structured and placed technology based offerings with selling brokers and supported the offering as a wholesaler.

## **Education**

- Bachelor of Engineering Science, Industrial Management from Washington University, St. Louis.
- Juris Doctor Degree from Georgetown University Law School, Washington, D.C.

## **Professional Activities**

- American Intellectual Property Law Association, Licensing Executives Society, and the Bars of the District of Columbia, North Carolina, and Virginia. Admitted to practice before USPTO, Court of Claims, CAFC and E.D. VA Fed. Dist. Ct.

## **I. Representative legal work:**

- Created and implemented strategy for patenting financial service technology by obtaining extensive patent claim coverage on interfaces, systems and implementing software.

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- Obtained early patent for brokerage on the Internet, US Pat. No. 5,664,115.
- Lead counsel in Citibank, N.A. v. OnLine Resources, patent infringement case.
- Co-counsel in patent infringement cases for textiles, paper products, and bio processing technology.
- Second chair on two Trilogy Communications patent infringement cases and one appeal.
- Wrote patent section of appeal brief in Conopco v. May et al on patent, trademark & trade dress infringement.
- Co-counsel for Dr. Pepper against Coca Cola for trade dress infringement.
- Negotiated Bede Aircraft consent decree with FTC.
- Legislative representation of automotive parts industry before Congress, DOT, EPA and FTC.
- Third party reviewer and mediator of inventorship disputes on cases between universities and corporate research sponsors.
- Patent license audits.
- Extensive licensing experience in computer software and systems.
- Due diligence and transactional documentation for software acquisitions.
- Opined on validity of numerous patents in the computer and telecommunications industry, including the AT&T Pike patent and the Lemelson robotics patent portfolio.
- Led successful patent interference proceedings.

## II. Representative Clients:

### Present Clients:

- Stanford University
- Sun Microsystems
- e-commerce Companies:  
Perquia, San Francisco, Calif.  
ShopLive, Delray Beach, FL
- Health Care Companies:  
Eyetech, Inc., NYC  
X-Mine, Inc. Brisbane, CA

### Representative Former Clients:

- Clorox, Oakland, CA
- Citibank (Citigroup), NYC
- GTE Services (Verizon), Irving, TX
- Telcordia (Formerly Bellcore), NJ
- MIT
- Washington University, St. Louis, MO
- Dr. Pepper, Dallas, TX
- Johnson & Johnson, NJ
- American Cyanamid (now American Home Products)
- University of Virginia Patent Foundation
- China Council for Promotion of International Trade
- Specialty Equipment Manufacturers Association (Auto Parts)
- National Hot Rod Association
- National Street Rod Association
- Sportsman's Policy Conference
- Bede Aircraft Company

### III. Business Activities:

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- Formerly corporate secretary and general counsel of Alexander Dawson, Inc., (dissolved) a technology holding company; member of investment committee, managed \$100 million short term cash, insurance, personnel, administration and aircraft fleet.
- Advisor to numerous technology startups.
- Licensed software, hardware and pharmaceutical patents.
- Audited IP license.
- Valued IP.
- Technology M&A for software.

### IV. Professional and Civic Activities:

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- Speaker on intellectual property subjects at the following: Trade Secret Forum, Licensing Executives Society, Association of University Technology Managers & University of Virginia faculty forum.
- Co-author on chapter of Association of University Technology Managers practice handbook covering bankruptcy and licensing.
- Former two term member of National Motor Vehicle Safety Advisory Council (DOT) and Vice Chairman of International Experimental Safety Vehicle Conference, promoter of seat belt usage and drunk driver laws.
- Member of Alexandria, Virginia Charter Review Commission and Author of City Charter 1970.
- USAF (64-68) Intelligence & Operations Research (RVN), Senior technology OR, Final Rank Captain.

### V. Articles:

Putting a figure on patent values can be of great value - By Dale Hogue, Snr

Valuing Hi Tech Intellectual Property - By Dale Hogue, Snr

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# inKNOWvations

## News

## inKNOWvations: November 2002

Welcome to *inKNOWvations*, your e-newsletter offering articles, products, and research supporting new product development and knowledge sharing initiatives throughout your organization.

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### Quotable Quotes...

According to a research study conducted by Accenture's Institute for Strategic Change this past summer,

*"Companies that forego innovation in difficult economic times in favor of cost cutting actually can miss opportunities to capitalize on areas that consumers have identified as ripe for increased spending."*

### In this Issue

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### Managing Your Patent Portfolio as a Financial Asset

By David Magnani and Brian Reuter

About 12,000 medical device patents were granted during 2001 in the U.S. alone. This represents an increase of almost 35% from the year before. Although the development of new technologies and processes is at an all time high, the unfortunate truth is that many industries have been ineffective at generating financial value from intellectual property (IP) assets.

It is estimated that only about 3% of today's active patents represent products in the marketplace or produce royalty income. Growing numbers of companies throughout industry are addressing this deficiency by formulating methods for turning their patent portfolios into important sources of ancillary revenue. IBM, for instance, has increased its annual licensing income from almost nothing 10 years ago to nearly \$1 billion today. Xerox, Dow Chemical and Procter & Gamble are aiming to generate more than \$500 million each year from their respective patent portfolios. However, very few medical product manufacturers have developed strategies for creating value from their unused intellectual property.

Companies seeking to more effectively manage their patent portfolios as financial assets should concentrate on three principal areas:

- Mining for marketable intellectual property;
- Putting a value on intellectual property; and
- Successfully marketing intangible assets.

#### **Mining For Marketable IP**

The biggest reason that so little of today's corporate intellectual property is producing revenue is that most companies are oblivious to the value of their unused patents. For many companies, the size of their portfolios makes it difficult and time-consuming to mine for valuable patents. But this mining process is a critical first step toward realizing licensing revenue.

One approach to mining is to find out who is currently infringing on your patents. Once identified, these

companies can be approached to pay licensing fees. Techniques for determining where your patents are being used include:

- Tap online resources such as Derwent Information or the free databases available from the U.S. Patent and Trademark Office (USPTO) to research and analyze citations to determine which of your patents are being frequently cited and by whom. Companies citing your patents are likely to be using your technology.
- Reverse engineer your competitor's products to identify areas of infringement.

Another approach to mining is to screen your existing portfolio for patents that are likely to be licensable to other industries. A viable scoring system will allow you to efficiently assess the value of individual patents without conducting costly and time-consuming research and analysis. The key determinants of a patent's worth are its relative dominance, technical uniqueness and market value. An effective scoring system will allow you to quickly evaluate and score your patents against these criteria and eliminate those that have low value. The remaining, smaller population of patents can then be subjected to further value analysis.

### ***Putting A Value On IP***

Putting a value on the intellectual property in your portfolio is critical to deciding where to put your licensing efforts and to building a foundation for successful negotiations with potential buyers. The process of valuing patents can be difficult because it involves three independent factors, and analysis in each area requires a discrete set of skills or type of understanding:

<b>Factor</b>	<b>Required Skill/Understanding</b>
Strength of the patent position	Patent analysis/legal skills
Uniqueness of the technology's application	Understanding of technology relative to competitive technologies
Future commercial value	Understanding of industry and market conditions and opportunities

Valuation begins with a careful examination of the patent's definition and associated claims to assess whether the patent is dominant and restricts competition. Next, alternative technologies must be evaluated to determine if the patent represents technology with a unique commercial application. Finally, the potential commercial value must be assessed. In determining commercial value, multiple approaches should be used to allow triangulation that results in a value that is agreeable to both buyer and seller. The four most common approaches to valuation are:

- Market value determines what someone would be willing to pay for the technology;
- Present value of future cash flows uses market and technology research and analysis;
- Option pricing treats the patent as an option on future technology and uses common option pricing models; and
- Conjoint and relative value analysis bases the value of the patent on the incremental value that the technology would create for buyers and their end-customers.

In the end, the value of the patent must also be adjusted to reflect the levels of risk associated with whether the technology will reach a commercial state and realize its potential value.

### ***Successfully Marketing An Intangible Asset***

In most cases, the application and commercial value of a patented technology is not clear to all parties. As a consequence, without effective marketing, even the most valuable patents can lie dormant and produce no revenue.

Typically, one of the principal purposes of the marketing effort is to reach prospective buyers or licensees that are unaware of your technology. The first step in this process is to prepare profiles that describe the technology and its possible applications. The next step is to identify industries and companies where the technology could have commercial value. At this stage, there can be considerable value in contacting technical and industry experts who have the ability to provide informed perspectives on the needs of specific markets and how they might relate to the application of your technology. If your technology is in an early pre-commercialization stage where the applications are not well defined, you might also benefit from a networking approach that leverages technology transfer networks. Once prospective buyers or licensees have been identified, you should develop a negotiation strategy, assemble a skilled sales and negotiating team, and approach the target companies.

### ***Maximizing Returns on Intellectual Property***

The opportunity to create an ongoing stream of revenue from intellectual property is significant for companies throughout industry. In fact, a well-respected industry analyst firm recently estimated that IP-rich enterprises choosing to formulate and pursue intellectual-property management strategies will increase IP-related revenue by 50 percent through 2004. Companies striving for long-term growth and

profitability will be well-served by developing strategies that adequately and effectively identify, protect and leverage their intellectual property.

**About the Authors:** David Magnani is Managing Director of Client Solutions and Brian Reuter is a Research Director for Minneapolis-based Sopheon ([www.sopheon.com](http://www.sopheon.com)), an international developer of software solutions and provider of intellectual property management services.

## Kinds and Commercial Importance of Intellectual Property Rights -- Download Free White Paper

The choice between protecting an invention by keeping it a trade secret or going through the process to patent it is challenging. If an invention in principle can be protected by either trade secret or patent, careful consideration must be given to whether or not the invention can truly be kept secret (i.e. knowledge of the invention leaves the company when an employee leaves or when you partner with suppliers on the project, etc.). Keeping it a trade secret must be weighed against the cost and time invested in taking action to patent your invention. In this white paper, Dr. Heinz Goddar, European Patent Attorney and recent presenter in Sopheon's online seminar series, provides some insight on the 'Kinds and Commercial Importance of Intellectual Property Rights'. [Click here to download the white paper.](#)

## Expert Advice Paves the Way to Product Enhancements

When you decide you need additional expertise, perhaps a technical consultant, an analyst, or an expert witness to solve a problem or answer a specific question, how do you find the right person?

You could search the World Wide Web. Possibly talk with some colleagues. Maybe even contact a University professor. Do you have enough time? How do you validate their expertise?

Take the case of a major pharmaceutical producer.

You wouldn't think squeezing an extra half-gram of ointment into a two-gram tube would be such a big deal, but the 25% to 50% "giveaway" volume was costing a major pharmaceutical producer dearly. Recognizing that the problem was inherent in the tube filler design, the equipment engineer in charge sought the advice of a Sopheon expert. A quick search put him in touch with an expert in metered pump applications involving high-viscosity fluids. After listening to the problem, he told the engineer about a metering pump manufacturer that could ensure precision filling within .03 percent of the 2-gram allotment. The new meter was installed. Following initial debugging and optimization, the new meter led to a highly precise filling operation that is saving the company an estimated \$1 million a year.

The Sopheon Expert Network provides more than 1,700 peer-recommended experts with knowledge in virtually every area of science, technology and business. They provide fast, confidential help, offering both theoretical and practical knowledge. These experts are available for telephone consultation, have committed to respond to calls within 24 hours, and have signed confidentiality and intellectual-property agreements. In addition, these experts are available for onsite consultation, technology briefings, product and process design assistance, technical troubleshooting, seminars, focus groups and training.

Getting help from an expert requires little preparation. Most often, the best approach is to just pick up the phone and call or send a quick email to inquire, and let the expert walk you through your problem. For more information or some expert advice to solve a problem or answer a specific question, contact Sopheon at [info@sopheon.com](mailto:info@sopheon.com).

## Rate Your Environment for Innovation

Each of the following questions seeks to assess one of the dimensions of the climate for innovation. While the full questionnaire is far more accurate, thinking about these questions can be instructive. Consider how people in your organization might answer each question. If you have a formal leadership position, ask your people to answer them anonymously.

		A Little	...	...	...	A Lot
1.	To what degree are people deeply committed to their jobs?	1	2	3	4	5
2.	To what degree are people able to decide how to do their jobs?	1	2	3	4	5

3.	To what degree do we take the time to think of alternate ways to accomplish a difficult task before having to take action?	1	2	3	4	5
4.	To what degree are new ideas given a warm reception, and to what degree are resources available to give new ideas a try?	1	2	3	4	5
5.	To what degree is there emotional tension here?	1	2	3	4	5
6.	To what degree is there lively debate on the issues?	1	2	3	4	5
7.	To what degree do we hear good-natured joking, and to what degree is the work atmosphere relaxed?	1	2	3	4	5
8.	To what degree are people informal and open with one another?	1	2	3	4	5
9.	To what degree do people feel free to take action when the outcome might not meet expectations?	1	2	3	4	5

In working with clients, we consistently find that the view of the environment is directly related to the rater's level in the organization: the higher up in the organization, the better the environment appears to be. It is a little like flying a kite over New York City at 30,000 feet; from that height it looks just fine, but at street level you begin to notice the problems. However, it is at street level that work gets done. As you think about how to improve your climate for innovation, be sure to focus at the 'street level' of your organization.

*The information provided is an excerpt from an article titled, 'How's Your Climate for Innovation?' By Dr. Charles Prather, Ph.D, and reprinted by permission. For more information or to contact Dr. Prather, visit [www.bottomlineinnovation.com](http://www.bottomlineinnovation.com).*

## Winning Practices in Product Development

Throughout 2002, Sopheon hosted a series of FREE online seminars focused on providing practical insight for R&D professionals striving to deliver innovative products with competitive advantage. Each one-hour session featured presentations by leading experts and industry practitioners offering best practice insight for product development teams.

Topics covered during our 2002 Online Seminar Series included:

- 14 May: New Product Portfolio Management
- 23 May: Improving the Odds of Successful Execution within Product Development
- 27 June: Leading Edge Principles for Developing an Environment of Innovation
- 12 September: Leading Innovation: Growing and Harvesting the Best Ideas from Your People
  - 26 September: Why Automate Your Product Development Process?
  - 8 October: Getting an Upper Hand on Product Development Project Risks
  - 22 October: Proactive and Predictive R&D Metrics
- 7 November: Kinds and Commercial Importance of Intellectual Property Rights
  - 19 November: Information Management for Product Development

If you were not able to attend these sessions or would like the opportunity to listen to any of the presentations again, all of these session are available for replay on our website on the [Event Archive page](#).

If you prefer, any of these sessions can be provided to you on CD. To request a copy of a CD, email us at [info@sopheon.com](mailto:info@sopheon.com). Remember to include your name, company, mailing address, phone number and session title in your email request.

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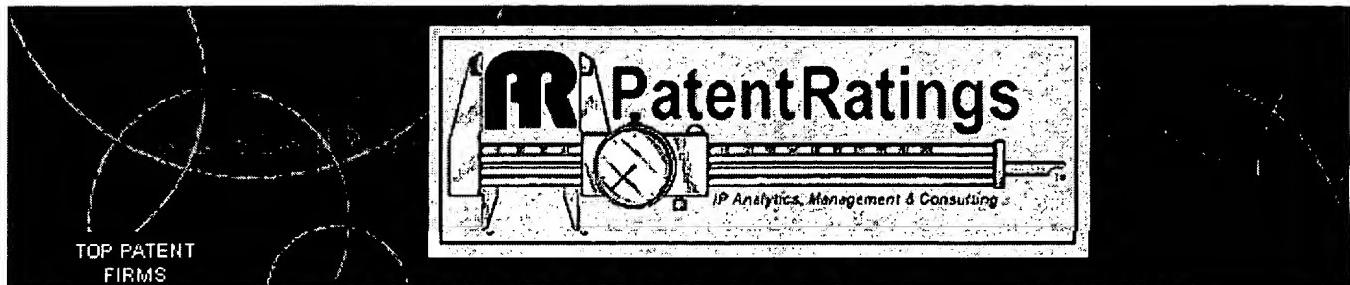
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[Home](#) | [FAQ's](#) | [About Us](#) | [Contact Us](#) | [Site Map](#)**COMPARATIVE PATENT QUALITY ANALYSIS****A Statistical Approach For Rating and Valuing Patent Assets**

By: Jonathan A. Barney

**INFORMATION ABOUT  
PATENT RATINGS**

"Numbers serve to discipline rhetoric. Without them it is too easy to follow flights of fancy, to as it is and to remodel it nearer the heart's desire."

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~ Ralph Waldo Emerson ~

**Introduction**

Accurately appraising the value of patents and other intangible intellectual property assets is task requiring mastery of a broad range of legal, technical and accounting disciplines.

**USEFUL LINKS**[U.S. Patent Office](#)[World Intellectual Property Organization \(WIPO\)](#)[IP Search Engine](#)[Patent Café](#)[LECG Economics & Finance](#)[More useful links...](#)

The value of a patent ultimately rests on the ability to enforce the legal rights it secures. But, fact that not all patents are created equal. There are good patents and bad patents; broad p: patents; patents that are well-drafted and prosecuted and others that are not so well-drafted. Two different patents – even in the same industry and relating to the same subject matter – drastically different royalty rates in a free market (or damage awards in litigation) depending comparative breadth of the legal rights secured and the defensibility of those rights against challenges. Each of these qualities can have a dramatic impact on the enforceability of a pa ultimate economic value. Obviously, a patent or portfolio that has a narrow scope of protection indefensible against a validity challenge will have less value than a patent or portfolio with a protection and strong defensibility.

A skilled patent lawyer can examine a patent or portfolio and, based on a detailed legal and analysis, render an opinion as to its likely scope and defensibility. But, such analysis is inher leaving the possibility for inconsistencies in appraised quality. Different attorneys may hold c the underlying legal and technical issues bearing on a patent. Legal patent analysis is also ti and expensive. Thus, it is often not feasible to consult a patent lawyer in every situation whe information may be desired.

This article describes a purely *objective* approach for comparatively assessing and rating pa on reported abandonment rates of patents sharing statistically similar attributes. A proprietar employed to calculate quality ratings for individual patent assets based on selected "metrics" have statistical significance in predicting the quality of interest. Ratings may be used for com analysis or as a general guide in conducting patent valuation analysis.

**Estimating The Value of a Patent**

Patents play an important role in our economy in encouraging private investment in new idea development of new technologies that improve productivity and quality of life for everyone. E than a quarter-million patent applications are filed in the United States Patent and Trademar resulting in the issuance of over a hundred fifty-thousand patents annually.

www.patentratings.com

Patent owners and applicants pay combined fees and costs of over a billion dollars per year obtain and maintain their patents and applications. Additional fees and costs are typically incurred by professional services, such as attorneys fees, search fees, drafting charges and the like. A report conducted by the American Intellectual Property Law Association ("AIPLA") reported that the fees charged by law firms for preparing and filing original utility patent applications in 1999 ranged from \$7,993, depending upon subject matter and complexity. In addition, patent owners bring infringement suits each year in the federal courts. The median cost of these suits in 1999 was \$1.5 million per side through trial and appeal. It can be conservatively estimated that the total cost for obtaining, maintaining and enforcing patents in 1999 exceeded about \$5.5 billion.

Patents derive unique value from the legal rights they secure, namely the right to exclude competing products or services that infringe the patented technology. This value (if any) usually manifests itself as a net increase in operating cash flow resulting from either: (i) premium pricing of patented products or services; or (ii) royalty payments received as a valuable consideration paid by competitors or other parties for use of the patented technology. By combining the value of the patent as a whole with the two inputs and the timing and probability of anticipated future revenue streams, an experienced professional can readily estimate the value of a patent.

A familiar scenario is a patent licensed to a third party under an exclusive agreement that grants the licensee a right to receive a predetermined income stream over a certain period of time. Using an income valuation approach, the value of the licensed patent can be calculated simply as the net discounted present value of the projected cash flows. Similarly, if the patent owner is exploiting the patented technology itself, the value of the patent may be fairly estimated as the net discounted present value of the incremental profit (over and above what would have been earned if no patent had been identified) attributable to the patent over the remaining life of the patent or the economic life of the patented technology, whichever is shorter.

In these and similar scenarios where specific anticipated economic benefits can be identified with respect to a particular intellectual property asset, accurate and credible estimations of value can be calculated using the traditional income valuation approach. In many cases, however, it is exceedingly difficult to identify with the desired degree of certainty a definite income stream or other anticipated economic benefit associated with a particular intellectual property asset of interest. The classic example is a newly issued patent covering a technology that, for whatever reason, has yet to be commercialized. In these cases, the income valuation approach is less useful. The more tenuous the connection between a patent and the actual source of the anticipated future revenues, the more speculative the income valuation approach becomes.

In theory, a market valuation approach can provide accurate estimates of patent value in such cases. In practice, however, there are very few open financial markets that support active trading of intellectual property assets. Most intellectual property assets are bought or sold in private transactions involving sales of entire businesses or portions of related businesses. Even if the financial particulars of such transactions were reasonably well known, it would be difficult, if not impossible, to unbundle a particular identified intellectual property asset from the other assets involved in an aggregate sale transaction. As a result of these and other practical difficulties, there is presently very little real-world data upon which direct market comparisons of intellectual property assets can be made.

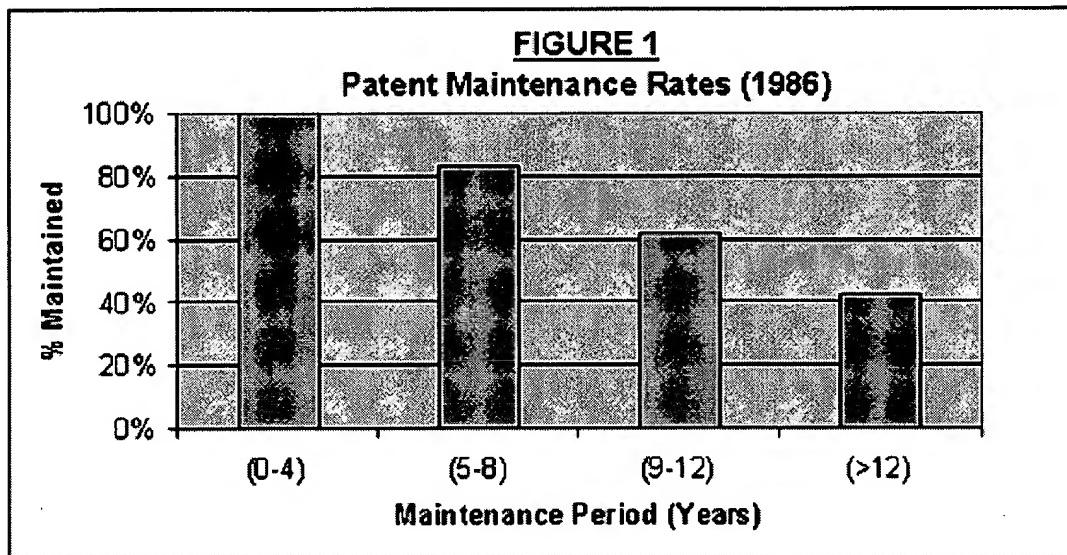
The cost-basis approach, while sometimes useful as a rough estimate of asset value, has one major shortcoming in the patent context. The cost-basis of a patent rarely approximates the underlying value of the patent. For example, if all other things being equal, it costs just as much to secure a patent for a worthless invention as it does to secure a patent for a valuable invention. But, the patent for the valuable invention may be worth many, many times its cost. Conversely, the patent for the worthless invention will, of course, be worthless.

An often suggested analogy here is an options contract. One can think of a patent as an option to buy or sell some future technology having unknown value. The cost-basis represents the purchase price of the option. As the option period is long and the value of the patented technology increases over time, the value of the option also increases. As the option period ends and the value of the patented technology becomes more apparent over time and as the option is exercised, the value of the option tends to converge to the commercially realizable value of the underlying technology, regardless of the original cost-basis of the option.

So, how does one estimate the value of a patent that has produced no discernable income so far? The answer lies in the benefit upon which future cash-flow projections can be based?

**When In Doubt, Follow The Money**

In the United States and most foreign countries, patent owners are required to pay a periodic "maintenance fee" during the term of a patent if they wish to maintain the patent in force. In these countries, maintenance fees consist of fixed annual fees of \$200-300 per year paid to the relevant government patent office to maintain a patent in force. In the United States, maintenance fees are paid only every four years and escalate progressively from \$850 to maintain a patent in force beyond the fourth year, to \$1,600 to maintain a patent in force beyond the eighth year, to \$2,990 to maintain a patent in force beyond the twelfth year.



The relatively substantial and escalating nature of these required maintenance fee payments has the effect of discouraging the maintenance of less valuable patents. This trend is borne out by Figure 1 which indicates average patent maintenance rates for a study population of about 70,000 patents issued in 1986.

As the above graph illustrates, approximately 83.5% of all patents issued in 1986 were maintained beyond the fourth year, approximately 61.9% of the patents were maintained beyond the eighth year, approximately 42.5% of the patents were maintained beyond the twelfth year. In other words, approximately 42.5% of the original sample population were abandoned or allowed to expire before the full term, corresponding to an overall average patent mortality (abandonment) rate of approximately 57.5%.

**The Statistical Model**

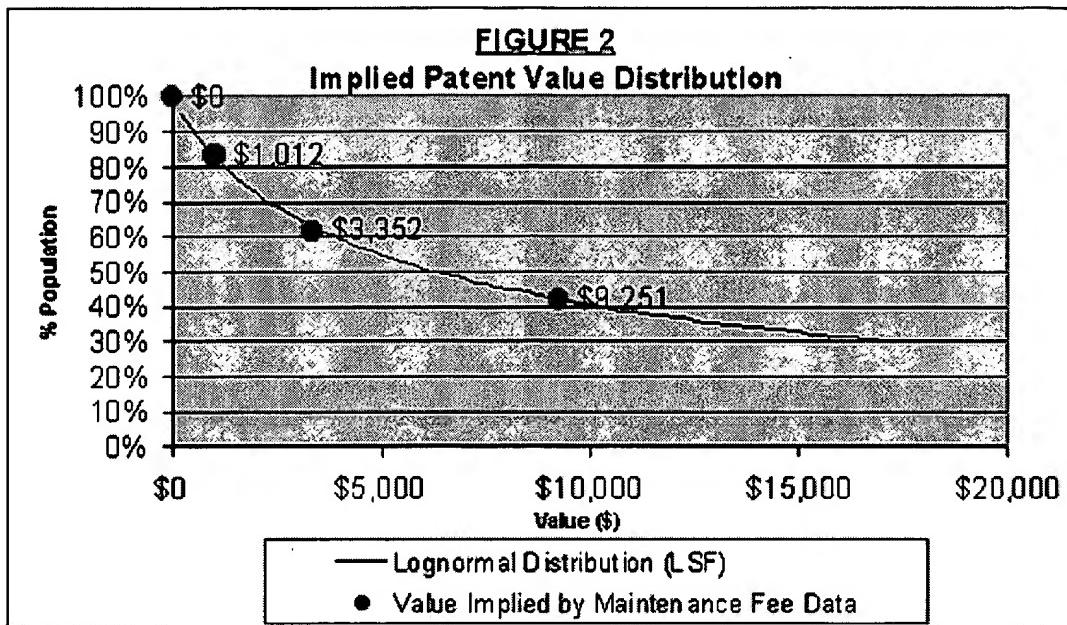
"There are three kinds of lies: lies, damned lies, and statistics."

~ Benjamin Disraeli ~

The above-reported statistics simply report observed patent maintenance rates for patents in a population according to official records maintained by the PTO. These statistics (insofar as they are correct) are incontrovertible. The more provocative question for purposes of the present analysis is whether some patents are abandoned and others maintained?

Basic economic theory suggests that individuals and companies invest in intellectual property when the perceived value of the expected economic benefits secured by the intellectual property exceed the anticipated investment required to obtain and maintain the asset(s), taking into account appropriate risk factors, anticipated rates of return, etc. Thus, a rational economic decision-maker would make additional incremental investments in a patent asset (i.e., payment of maintenance fees) if she believes that the asset will produce expected future economic benefits sufficient to justify the investment.

By statistically modeling this economic decision on a macro-scale we gain a unique, introspective view of how patent owners themselves perceive the value of their own patents. In particular, a statistical model can be formulated between observed patent maintenance/abandonment rates and the probabilities of expected patent values implied by those observations. Thus, we are able to derive the following distribution curve, which roughly approximates the implied (expected) value at issuance of a sample of patents issued in 1986.



The above graph is based on reported PTO maintenance data for a sample population of about 70,860 patents issued in 1986. Data points were calculated representing threshold cut-off or "gate" values for four sub-populations comprising patents expiring after the 4<sup>th</sup> year, 8<sup>th</sup> year, 12<sup>th</sup> year and 16<sup>th</sup> year term, respectively. A lognormal probability distribution curve was then fitted to the calculated least-squares-fit.

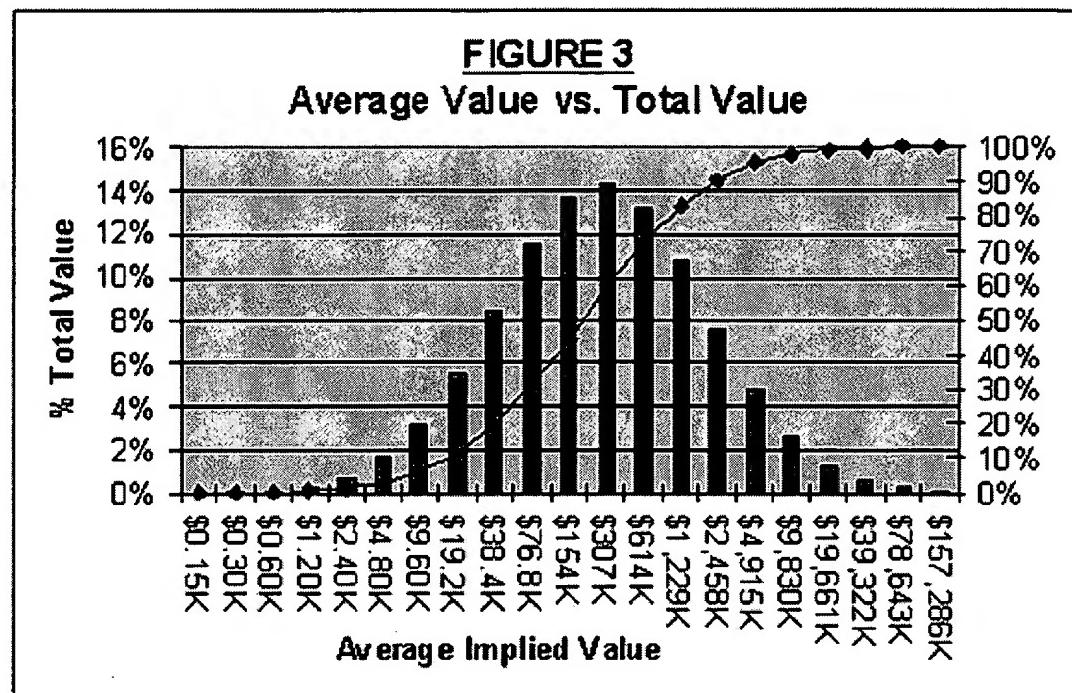
The statistical model predicts that the bottom 10% of patents in the sample population had a value at issuance equal to or less than about \$475. The top 10% of patents was predicted to have a value at issuance equal to or greater than about \$74,000. Roughly half of the patents in the sample population had implied values less than or equal to about \$6,250. The fitted lognormal distribution curve produced an expected median patent valuation of \$6,279 and a mean valuation of \$28,700. Table 1, below, provides a summary of extrapolated implied values by percentile ranking (lowest to highest) predicted by the model.

**TABLE 1**

Percentile	Implied Value
1.000%	\$72
5.000%	\$270
10.000%	\$475
25.000%	\$1,750
50.000%	\$6,250
75.000%	\$23,000
90.000%	\$74,000
95.000%	\$149,000
99.000%	\$560,000
99.900%	\$2,400,000
99.990%	\$8,000,000

The aggregate implied value of all 70,860 patents issued in 1986 was predicted to be \$2.04 billion.

2,480 patents valued in excess of \$300K accounting for about 50% of this amount. Figure 3, a detailed breakdown of average implied patent values (x-axis, logarithmic scale) expressed of overall aggregate patent value (y-axis) according to the statistical model.



The above graph illustrates that patents having average estimated values between about \$2 (middle bar, average = \$307K) are predicted to account for approximately 14.3% of the aggregate value of the sample population. Patents having average implied values less than \$20,000 (a sample population) account for only about 11% of the aggregate value according to the statistical model. Thus, the statistical model supports the view, long held by many in the field, that patent values are relatively large proportion of patents appear to be worth little or nothing while a relatively small number of patents appear to be worth a great deal.

#### Patent Ratings

"If you can't measure it, you can't manage it."

~ Peter Drucker ~

The statistical model described above can be used to derive or estimate implied value distribution curves for relatively large sample populations (hundreds or thousands of patents) for which maintenance data is available. The model does not directly predict the value of a particular individual patent or set of patents that may be of interest. But, if one were able to comparatively rate or rank patents of interest within the study population, then the model could be used indirectly as a guide or comparative basis for estimating appropriate valuation ranges of individual patent assets or portfolios according to percentile rankings.

As a hypothetical example, assume a patent valuation expert were to study a random sample of 2,480 patents, ranking them from least desirable to most desirable. A statistical model of the sample population could be formulated as described above using PTO maintenance data. Implied valuations for each patent in the population could then be estimated from the determined ranking and the implied value distribution curve (e.g., Figure 2) predicted by the model. Patents determined to have the highest percentile rankings would be correlated to the high end of the value distribution curve. Conversely, patents with the lowest percentile rankings would be correlated to the low end of the value distribution curve.

In the above example, a human decision-maker comparatively ranks selected patents. But, it can also be statistically derived from PTO maintenance data based on observed statistical correlations between patent maintenance rates and certain objective attributes or "metrics" revealed by the document itself and/or associated public records. For example, Table 2 below summarizes average maintenance rates for patents categorized by the PTO in several different technology classes.

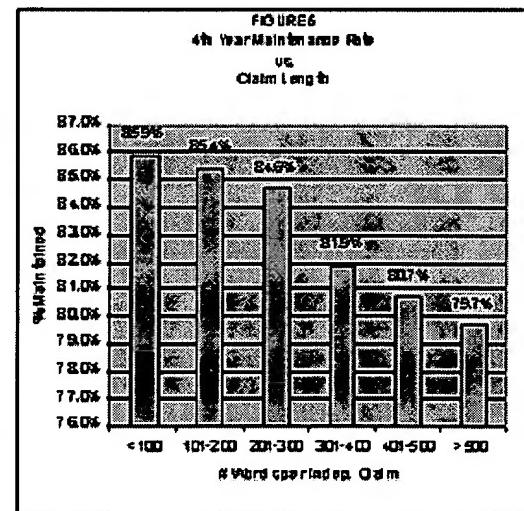
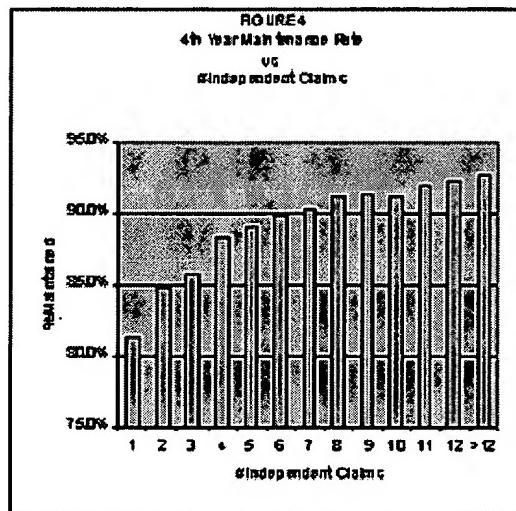
**TABLE 2**

Class	Description	Maint. Rate
482	Exercise Equipment	21%
473	Golf Clubs/Equipment	26%
446	Toys and Amusement Devices	30%
206/250	Packaging	43%
365/364	Computers	55%
935	Genetic Engineering	56%

As Table 2 illustrates, patents classified in Class 482 ("Exercise Equipment") have an average maintenance rate of 21% (79% of patents abandoned prior to full term), while patents classified in Class 935 ("Genetic Engineering") have an average maintenance rate of 56% (44% of patents abandoned), and in Class 935 ("Computers") have an average maintenance rate of 55% (45% of patents abandoned).

Since higher maintenance rates correspond generally to higher implied values according to the distribution model, the above data provides a simple, objective basis on which to comparatively value patent assets. All other things being equal, patents relating to genetic engineering and computers are statistically more valuable than patents relating to golf and exercise equipment.

Figures 4-7, below, illustrate similar statistical correlations observed between patent maintenance rates and various selected patent metrics. The reported statistics are based on 4<sup>th</sup> year maintenance rates for a population of about 100,000 patents issued in 1996.



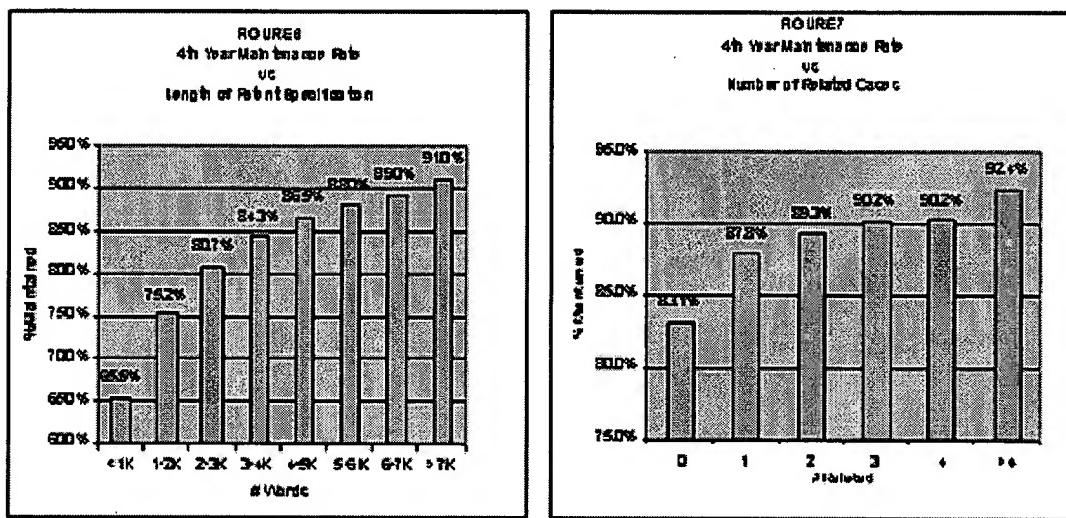


Figure 4 shows that patent maintenance rates generally increase with the number of claims. A sample population having only one independent claim had an observed 4<sup>th</sup> year maintenance rate of 83.1%, compared to 92.4% for patents having 12 or more independent claims. The data suggests that more independent claims are more valuable. Intuitively this makes sense – the more claims, the broader scope of protection and the better the likelihood of surviving a validity attack.

Figure 5 shows patent maintenance rates generally decrease with claim length (number of words per independent claim). Patents in the sample population having an average word count less than 500 had an observed 4<sup>th</sup> year maintenance rate of 85.9%, compared to 79.7% for patents having an average word count of 500 or more. The data suggests patents having shorter claims are more valuable. Again, this makes intuitive sense – less words means less limitations and, thus, a broader scope of protection.

Figure 6 shows patent maintenance rates generally increase with the length of written specification in the sample population having written specifications less than 1,000 words had an observed 4<sup>th</sup> year maintenance rate of 65.5%, compared to 91.0% for patents having written specifications longer than 1,000 words. The data suggests patents having longer written specifications are more valuable. Longer specification provides better support for patent claims and strengthens the patent against legal challenges. A longer specification may also indicate a higher initial investment in the original patent (implying a higher initial value expectation).

Figure 7 shows that patent maintenance rates generally increase with the number of recorded priority cases. Patents in the sample population which made no priority claim to an earlier patent had an observed 4<sup>th</sup> year maintenance rate of 83.1%, compared to 92.4% for patents claiming priority to related cases. The data suggests that patents having more priority claims (more related cases) are more valuable. Intuitively, more priority claims probably means a patent is entitled to an earlier filing date, which can be beneficial in fending off art-based validity attacks. It could also indicate a greater overall interest and investment by the patentee in the patented technology.

Several studies have postulated that the number of citations or references made to an issued patent subsequently issued patents (so-called "forward citation rate") may have a positive correlation with the patent's value. This correlation is well supported by the data, as illustrated by Figure 8, below:

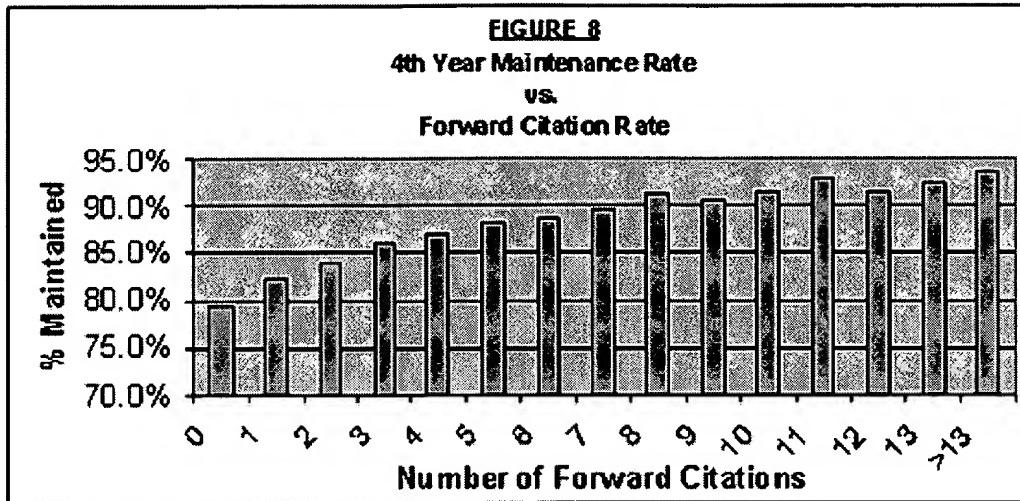


Figure 8 shows that patent maintenance rates generally increase with the forward citation rate. The sample population that received no forward citations had an observed 4<sup>th</sup> year maintenance rate of 78.5% compared to 93.5% for patents having 14 or more citations. The data suggests that patents with more forward citations are more valuable. Intuitively, a high forward citation rate could indicate a high level of interest or activity in the patented technology and/or similar/related technologies.

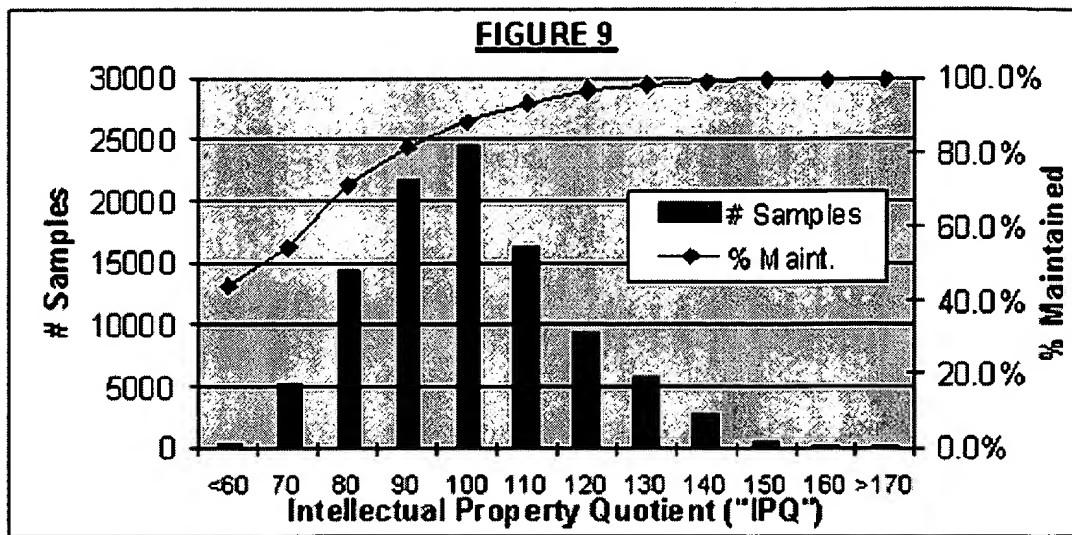
#### Using Patent Quality Ratings to

#### Predict Patent Value

"There are two types of forecasters. Those who don't know, and those who don't know they don't know."

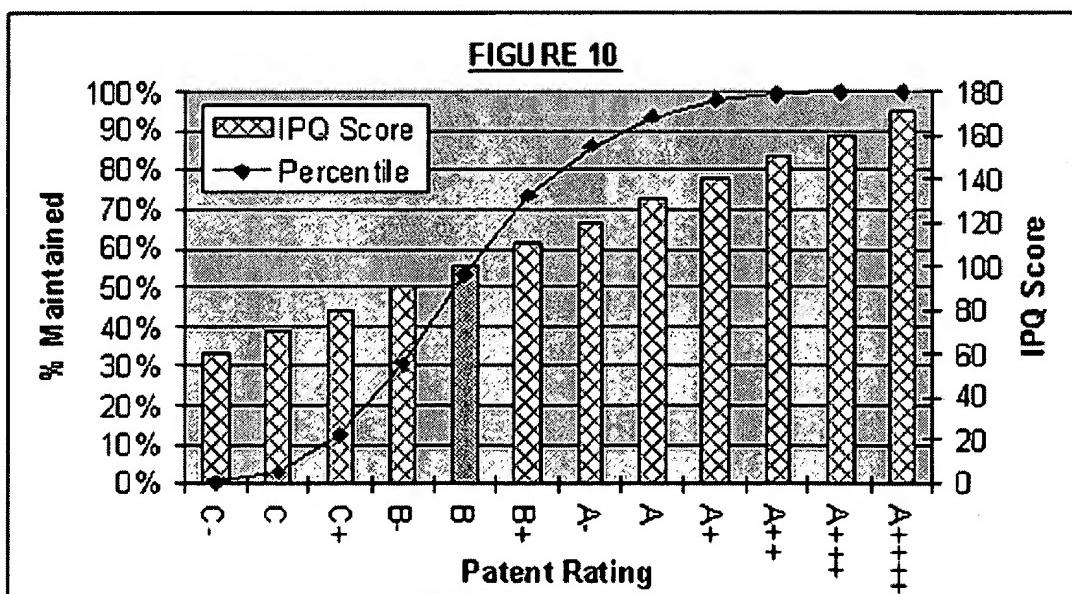
~ John Kenneth Galbraith ~

Each of the patent metrics identified above was determined to have a statistically significant relationship ( $p < 0.01$ ) with observed patent maintenance rates. Using these and other objective patent metrics, a multiple regression model was constructed. The model comparatively ranks or scores individual patent applications based on a number of identified predictor variables (patent metrics) determined to have a statistically significant relationship to observed patent maintenance rates. Thus, we are able to derive a probability distribution of 4<sup>th</sup> year maintenance rates based on computer-generated scores for a sample population of approximately 10,000 patent applications issued in 1996:



Specifically, the fitted regression model calculates a raw numerical score for each patent across extracted patent metrics. Raw scores are mathematically adjusted to provide a normalized expected score of 100. This adjusted score, dubbed the "Intellectual Property Quotient" or IPQ familiar Intelligence Quotient or IQ used to score human intelligence. Thus, a score of 100 generally corresponds to an expected normal or median quality. An IPQ higher than 100 indicates average quality (higher expected maintenance rate) while an IPQ lower than 100 indicates below quality (lower expected maintenance rate). Figure 9 indicates that patents scoring 60 or less had an observed 4<sup>th</sup> year maintenance rate of 43.7%, compared to observed maintenance rates for all patents scoring 150 or better. The average 4<sup>th</sup> year maintenance rate for all patents in the sample was 85.2%.

As a convenient reference, arbitrary letter ratings are assigned to each patent based on the generated IPQ score and percentile ranking, as illustrated below:



Patents ranked between the 40<sup>th</sup> and 60<sup>th</sup> percentiles are assigned a "B" rating corresponding to median expected quality. Patents ranked below and above the 40<sup>th</sup> and 60<sup>th</sup> percentiles, respectively, are rated on a bell-curve grading scheme with a nominal low rating of "C-" (bottom 1%) and a nominal high rating of "A++" (top 1%).

of "A+" (top 5%). Patents ranked at or above the 99<sup>th</sup> percentile are rated "A++" (top 1%), A- and A++++ (top 0.01%).

Based on the computer-generated rankings and an implied value distribution for patents issued, one can now calculate average implied or expected values for rated patents. Table 2, below, provides these average implied values based on the IPQ scores and quality ratings predicted by the model.

**TABLE 2**

<b>Rating</b>	<b>IPQ</b>	<b>Maint. Rate</b>	<b>Percentile Rank</b>	<b>Implied Value</b>	<b># Patents</b>	<b>Total (\$Millions)</b>
C-	<60	43.7%	0.17%	\$25	292	\$0.01
C	70	54.2%	2.90%	\$37	5253	\$0.21
C+	80	71.4%	12.62%	\$815	14511	\$12.84
B-	90	81.7%	30.47%	\$2,750	21783	\$65.02
B	100	88.6%	53.29%	\$8,625	24648	\$230.75
B+	110	93.1%	73.42%	\$24,500	16197	\$430.73
A-	120	96.9%	86.18%	\$59,500	9506	\$613.98
A	130	98.3%	93.59%	\$137,000	5887	\$875.57
A+	140	99.3%	97.80%	\$355,000	2817	\$1,085.59
A++	150	100.0%	99.58%	\$1,170,000	599	\$761.67
A+++	160	100.0%	99.93%	\$3,450,000	90	\$289.80
A++++	>170	100.0%	99.99%	\$9,200,000	11	\$186.30
Aggregate Value (\$Millions):						<b>\$4,166.04</b>

According to the indicated data, a "B+" rating correlates to an estimated average implied value of \$24,500. Likewise, an A+++ rating correlates to an estimated average implied value of about \$3,450,000. The aggregate implied value of all patents issued in 1996 is estimated at \$4.17 billion, reflecting an aggregate value of about \$41,700.

Table 2 reports average implied values only. As such, these values do not necessarily accurately predict the actual or implied value of a specific patent or portfolio that may be of interest. However, the information, taken in conjunction with the determined patent quality ratings and/or IPQ score, provides a useful basis for comparative patent analysis and can provide an additional guide or baseline for patent valuation analysis. For probabilistic or "decision-tree" analysis, appropriate value range intervals can also be calculated for rated patent(s) according to any desired confidence level.

Tables 3 and 4 below provide a more-or-less random sampling of patents rated high (A+) and low (C-) respectively, according to the regression model:

**TABLE 3**

**(Patents Rated A+)**

<b>Patent No.</b>	<b>Class/Subclass</b>	<b>Title</b>	<b>Assignee</b>
5,521,720	358/448	Image processing apparatus for changing the resolution upon rotation of the image	Canon Kabushiki Kaisha
5,528,482	363/21.06	Low loss synchronous rectifier for application to clamped-mode power converters	AT&T Corp.
5,530,518	355/53	Projection exposure apparatus	Nikon Corporation
5,548,646	713/153	System for signatureless transmission and reception of data packets between computer networks	Sun Microsystems, Inc.
5,559,481	333/193	Surface acoustic wave filter	Fujitsu Limited
5,559,535	347/14	Temperature control of ink-jet recording head using heat energy	Canon Kabushiki Kaisha
5,572,232	345/581	Method and apparatus for displaying an image using subsystem interrogation	Intel Corporation
5,583,591	396/429	Photographic camera system	Sony Corporation
5,590,032	363/15	Self-synchronized drive circuit for a synchronous rectifier in a clamped-mode power converter	Lucent Technologies Inc.
5,590,342	713/324	Method and apparatus for reducing power consumption in a computer system using virtual device drivers	Intel Corporation

**TABLE 4**  
**(Patents Rated C-)**

<b>Patent No.</b>	<b>Class/Subclass</b>	<b>Title</b>	<b>Assignee</b>
5,487,601	312/183	Baseball card storage and protection device	Unassigned
5,490,821	601/134	Massage device for the soles of the feet	Unassigned
5,490,824	482/60	Limb exerciser	Unassigned
5,502,907	40/711	Innovated frame fixation structure	Unassigned
5,505,524	297/440.24	Portable hair styling and barber chair	Unassigned
5,509,392	123/516	Anti-vapor lock fuel system	Unassigned
5,509,775	414/437	Self loading cargo vehicle	United States (U.S. Army)
5,509,874	482/75	Stilt assembly having adjustable mechanism	Unassigned
5,520,564	446/15	Large bubble producing toy	Unassigned
5,522,573	248/118	Arm Brace	Unassigned

### **Conclusion**

The modeling techniques and data reported in this article provide useful new tools for conducting patent analysis and patent valuations. The article demonstrates that recorded PTO patent data can be statistically modeled to derive an implied probabilistic distribution of expected patent values for a selected patent population. The article also demonstrates that statistically derived patent ratings are a surrogate measure of comparative patent quality – an important factor often not considered in traditional patent valuation analysis. The reported techniques and data are not intended to replace traditional patent valuation analysis, but to provide a small step forward in improving the accuracy and credibility of patent valuations and assisting in the overall evaluative process.

NACV Article/jb

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April 2003



## FINANCIAL REPORTING

Pay attention to purchase price allocations in financial statements.

# A New Scorecard for Intellectual Property

BY JAMES DONOHUE AND CYNTHIA WALLER VALLARIO

### EXECUTIVE SUMMARY

- **CPAs NEED TO ADVISE COMPANIES ON** appropriate disclosure to financial statement users of intangible assets, acquired either separately or as part of a business combination.
- **AUDITORS AND CORPORATE FINANCE EXECUTIVES** must be aware of an important distinction in accounting for business combinations—certain intangibles such as intellectual property (IP) must be amortized and cannot be allocated to goodwill. FASB implemented new standards, effective July 2001, which changed the accounting treatment for business combinations by eliminating pooling and goodwill amortization.
- **REGULATORS WILL QUESTION ALLOCATING** the purchase price to goodwill rather than to intellectual property and other intangible assets unless companies can support the allocation. CPAs must recognize these issues when accounting for purchase price allocations to ensure their clients are not surprised by SEC inquiries after the business combination is completed.
- **CPAs SHOULD ASK THESE QUESTIONS** when conducting or reviewing a valuation of intellectual property for a purchase price allocation: What IP does the target own, and how is it categorized? Is the IP licensed? Has the target purchased IP from other entities? What about IP that is not formally protected yet? Is the target involved in IP litigation? Has the target allocated IP to the right reporting unit?

■ **WHILE PURCHASE PRICE ALLOCATION ISSUES** with respect to intellectual property are no more important than other factors to the economic success of a business combination, the allocation process is critical because it will affect reported earnings.

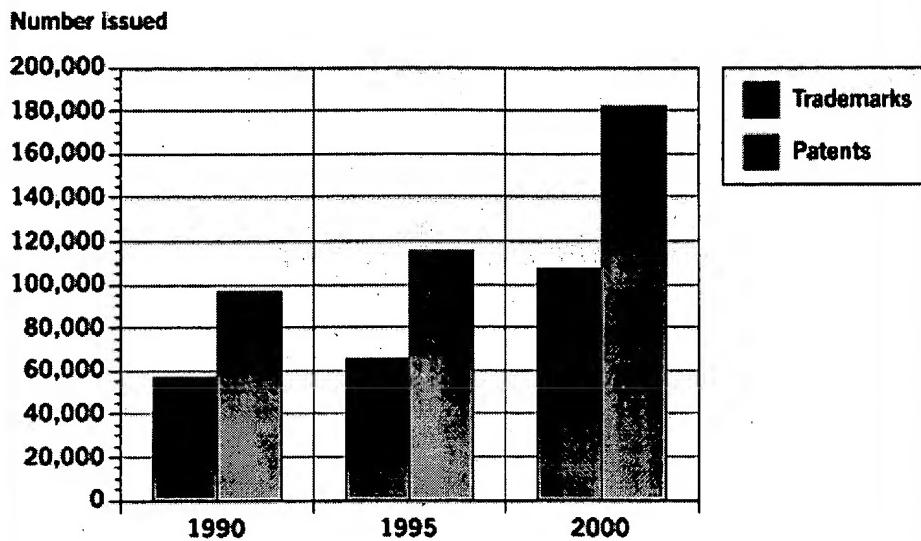
■ **BECAUSE CPAs MOST LIKELY VALUE** holding company assets for tax purposes, they can use the creation of a holding company advantageously when handling accounting issues that arise as a result of the new standards.

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**A**uditors and finance executives are charged with helping companies make sure they appropriately disclose intangible assets, acquired either separately or as part of a business combination, to financial statement users. Now that FASB Statement no. 141, *Accounting for Business Combinations*, and Statement no. 142, *Accounting for Goodwill and Other Intangible Assets*, are in effect, companies can no longer combine goodwill with other intangible assets such as intellectual property (IP) on their balance sheets. Instead they must report goodwill and intangibles separately, must disclose intangible asset classes—such as patents and trademarks—and must provide the estimated useful lives of such intangible assets in financial statement footnotes. (For more information see “Say Good-bye to Pooling and Goodwill Amortization,” *JofA*, Sep.01, page 31).

By specifically identifying patents, trademarks, trade secrets, licensing agreements and other IP involved in a business combination as intangible assets that require a separate valuation apart from goodwill, FASB has highlighted the importance of IP in the allocation process (see exhibit). As a result, auditors and corporate finance executives must be aware of a significant distinction in the accounting treatment of business combinations: While goodwill no longer will be amortized, certain intangibles (those with finite lives) must be. Since companies generally are reluctant to report an item that may have a negative impact on earnings, such as depreciating intangibles, CPAs must recognize when a purchase price allocation might raise questions from the SEC to ensure their clients are not surprised after the business combination is completed. Unless companies can support their accounting decisions, regulators will question allocating the entire purchase price to goodwill rather than part of it to IP and other intangible assets. Here’s some guidance for CPAs on how to handle these IP accounting issues to ensure the success of a business combination.

### Trademarks and Patents on the Rise



From 1990 to 2000, the number of patents issued and the number of trademarks registered annually have increased 88%. (Based on fiscal year ended September 30, 2000.)

Source: Performance and Accountability Report Fiscal Year 2000, United States Patent and Trademark Office. [www.uspto.gov](http://www.uspto.gov).

### YOU DON'T WANT THIS SITUATION

A hypothetical computer software company, with the help of its CPA firm, recently completed the acquisition of a smaller competitor. Although the fair value of the target's acquired net assets was \$500 million, the board agreed on a \$900 million purchase price given the target's superior technology, sales growth and leading market position. The company expected the acquisition target to create a presence in a new market virtually overnight. The company's board was particularly convinced of the merits of the deal after learning it would not have to amortize the massive amount of goodwill the purchase created due to recent accounting changes. The accounting treatment would ensure continued earnings growth after the acquisition, a major goal for the board.

Six months after the deal, however, the board learned about an SEC inquiry into the accounting methodology the company had used in the transaction. Not wanting to amortize, the company had allocated only a small portion of the purchase price to intangibles and treated most of the \$400 million premium paid over the fair value of the acquired net assets as goodwill in its financial statements. The SEC challenged the allocation of the purchase price between goodwill and intangibles and determined an additional \$80 million of it should have gone to the target's patent portfolio and therefore been treated as intangible assets, not goodwill. The change will force the company to reduce earnings estimates and restate its financials. As the board convenes, the CEO and CFO must explain what happened and why.

## FASB Changes Accounting for IP on Balance Sheet

**Intangible assets now have their own line.**

Before new standards		After new standards	
Period ending 31-Dec-02		Period ending 31-Dec-02	
Current assets		Current assets	
Cash and cash equivalents	\$1,000	Cash and cash equivalents	\$1,000
Net receivables	\$2,000	Net receivables	\$2,000
Inventory	\$1,500	Inventory	\$1,500
Total current assets	\$4,500	Total current assets	\$4,500
Property, plant and equipment	\$4,000	Property, plant and equipment	\$4,000
Goodwill and intangible assets	\$5,000	Goodwill	\$2,000
		Intangible assets	\$3,000
<b>Total assets</b>	<b>\$13,500</b>	<b>Total assets</b>	<b>\$13,500</b>
Current liabilities		Current liabilities	
Accounts payable	\$2,000	Accounts payable	\$2,000
Total current liabilities	\$2,000	Total current liabilities	\$2,000
Long-term debt	\$4,000	Long-term debt	\$4,000
<b>Total liabilities</b>	<b>\$6,000</b>	<b>Total liabilities</b>	<b>\$6,000</b>
<b>Total stockholder equity</b>	<b>\$7,500</b>	<b>Total stockholder equity</b>	<b>\$7,500</b>

### HOW TO IDENTIFY INTELLECTUAL PROPERTY

When the company prepared its financial statements, it made a common mistake and attributed too much of the purchase price premium to goodwill. CPAs and other members of the team should have identified the patent portfolio as an intangible asset that would need to be amortized. In the example, the company could have avoided its dilemma by focusing on the target's patents and licenses.

Here are some questions CPAs should ask when conducting or reviewing purchase price allocations and valuations for their clients:

- **What intellectual property does the target own?** Identify patents, trademarks, copyrights or other intellectual property assets that belong to the target company. Determine whether the target has an intellectual property business

plan. An IP business plan typically inventories intellectual property assets and documents the best strategic opportunities to generate value. Some plans also help entities measure the economic contribution of their IP activities. Not all companies will have an intellectual property plan, but the acquisition of an IP-rich company could trigger the need for one. Indexing the intellectual property assets into general categories will assist the valuation process for the acquiring company. If the target does not know and understand how to categorize what it owns or does not have an appropriate business plan, that could signal bigger problems. For example, if an entity is attempting to allocate significant value to IP assets that it does not have plans to use or enforce, it could be difficult to support the valuation. Technology companies in particular need to know what intellectual property assets they own.

■ ***Is the intellectual property licensed?*** Determine whether the intellectual property assets have been licensed to third parties. When an IP owner allows someone to use these assets, the owner typically receives royalty payments. Valuators must determine what those royalty streams are worth. If reliable future royalty income information is available, CPAs can use a discounted cash flow approach to determine the fair value of the licensed assets at the time of the transaction.

To illustrate, assume a patent portfolio license agreement calls for three annual payments of \$20 million each for use of the patent portfolio. Using a 20% discount rate on the \$60 million in total future payments yields a \$42 million fair value.

The discount rate should reflect the time value of money as well as the risk the royalty income projection may not be achieved. If the risk to the acquiring entity of not receiving the future income is high, then a higher discount rate is required. (FASB Concept Statement no. 7, *Using Cash Flow Information and Present Value in Accounting Measurements*, discusses other present value modeling alternatives and is referenced within Statement no. 142 as an appendix.) If the target's patent portfolio generates \$20 million a year in royalties, it will be almost impossible not to ascribe value to the patents when the company allocates the purchase price. License and royalty agreements specifically are included in Statement no. 141 as examples of intangible assets that meet the criteria for recognition apart from goodwill.

■ ***Has the target purchased intellectual property from other entities?*** Another sign that intellectual property deserves a valuation is a recent sale or purchase. If the target company recently had acquired a group of patents from another entity, they will require a separate valuation as an intangible asset. If the transaction had occurred recently and the circumstances surrounding the transaction are still similar, the transaction price could help support the valuation. For example, if the target company had recently purchased a patent portfolio for \$10 million, the acquiring entity could potentially utilize the \$10 million purchase price to justify attributing that amount to the same assets during the purchase-price-allocation process.

■ ***Is the target involved in intellectual property litigation?*** Businesses go to court over IP rights because use of a valuable asset is at stake. If the target has been involved in such litigation, valuators should identify the specific intellectual property assets at issue and determine whether the situation points to an undervalued asset. If the target has used IP litigation to successfully remove a competitor from a line of business or collected a large settlement from another, this could indicate that the underlying intellectual property will require a separate valuation for allocation purposes.

■ ***What about valuing “new” intellectual property which is not formally protected?*** Perhaps the most difficult valuation in a business combination involves IP assets the target has not used yet, not licensed yet or not patented yet or formally protected at the time of purchase. The valuation process is hampered when the valuators do not have an income stream to value or do not know whether an asset’s patent application will ever issue.

In many acquisitions, the target company may be developing next-generation products based on a combination of know-how, patent applications and recently issued patents. During the purchase price allocation, finance professionals should review how much money the target has invested in the technology and determine whether the company has cash flow projections or cost benefit analyses that value the technology for internal purposes. “While these assets have not yet produced revenue for the target company, clearly they may have value,” observes Frank R. McPike Jr., CPA, president and CEO of Competitive Technologies Inc., a Fairfield, Connecticut, provider of patent and technology licensing and commercialization services. CPAs can forecast royalty streams for licensed IP assets based partially on historical experience. “However, for unlicensed intellectual property, often the approach is to find assets with similar characteristics but further along in their life cycle to use as a proxy,” says Jeanne Wendschuh, CPA, controller for Competitive Technologies.

■ ***Has the company allocated the intellectual property to the correct reporting unit?*** FASB requires companies to allocate and test for goodwill impairment at the reporting unit level. A reporting unit is an operating segment that is at the level at which management reviews and assesses the operating segment’s performance. Reporting units have discrete, stand-alone financial information (a definition of reporting units can be found in Statement no. 142). Company managers also have to make sure intellectual property and other intangible assets are assigned to the proper reporting unit. Companies should already understand why certain units or divisions own or maintain IP assets. If the target company is confused and cannot answer questions about which division controls which intellectual property assets, this should raise a red flag to the valuators and buyer during the valuation process.

## HOLDING COMPANY ADVANTAGES

Many businesses establish intellectual property holding companies that benefit from lower taxes by transferring the ownership of the intellectual assets to an entity located in a lower tax jurisdiction and having that company charge back

royalties. In addition to the tax savings, the holding company can provide company managers and the deal team with insight and support when determining assets' useful lives, identifying reporting units and creating valuations for fair value purposes. CPAs can use the creation of a holding company advantageously when handling accounting issues that may arise as a result of new FASB standards. Before creating the holding company, CPAs most likely had already valued the assets for tax purposes. By updating those calculations at the time of the purchase price allocation and using the same models to track the value of the intellectual property assets going forward, the company could reduce its financial reporting costs.

For example, assume the CPAs and other financial professionals have prepared a discounted cash flow model to support the valuation and the transfer of the IP assets to the holding company. Using the same models, valuators can determine a new fair value by updating certain key assumptions including the discount rate, the amount and timing of future royalty income and changes in the assets' useful life. If the existing cash flow valuation model had assumed \$10 million in future annual royalty income but now royalty income is expected to be \$5 million, the valuator should adjust the model to determine the correct fair value. If certain other factors such as market acceptance of the technology protected by the patent portfolio have changed, valuators should adjust the discount rate to reflect that new information. (Although CPAs prepare intellectual property holding company valuations for tax purposes, they should not confuse an asset's tax basis with fair value—as provided in Statement no. 141.)

## ADDRESS ISSUES EARLY

Since implementing the new standards can be a challenge for some companies, Mark A. Spelker, CPA at J.H. Cohn LLP in Roseland, New Jersey, advises CPAs to inform clients of the requirements early in the process to avoid unnecessary problems after closing the deal. "The new standards will likely increase the amount of intellectual property and other intangible assets recognized in business combinations," he adds. Spelker acknowledges that while purchase price allocation issues surrounding intellectual property are no more important to the economic success of a deal than other factors, the allocation process is critical because it will affect reported earnings.

The CEO and the corporate finance professionals who serve on the team in the hypothetical company should have properly reviewed the target's patent portfolio prior to the acquisition. Had they done so they would have advised the board of the need to recognize and amortize the additional intangibles. Howard Weiner, CPA at Holtz Rubenstein & Co., LLP, in Melville, New York, expects that "the SEC will question any acquisition that does not have allocations to various identifiable intangibles" and says it also will look for explanations in financial statements on how these assets were valued and how their useful lives were determined.

"Estimating the useful life of intangible assets may be a difficult process," says Carmen Eggleston, CPA, a managing director in the Houston office of InteCap Inc., an intellectual property consulting firm. "While patents have a finite life,

trademarks can be maintained indefinitely,” she explains. “Also, it’s important to consider that the technological life of a patent may be shorter than its legal life. Companies will need to support not only the allocation of value but the associated lives as well.” For example, using the 20-year legal life of a patent simply because it equals the patent’s legal term is not sufficient if the technology probably will be replaced in five years. Eggleston says when valuers determine the useful life of intangibles, they should consider both contractual and economic factors including expected demand for the technology, risk of obsolescence, product life cycles and the impact of competition.

## DISTINCTIONS COUNT

Under historical accounting rules governing business combinations, the distinction between goodwill and intangibles was mandated by regulators but of less concern to investors, companies and CPAs since both items could be amortized annually on financial statements. Weiner believes that although accounting standards had required certain intangibles to be separately identified, companies “often ignored” the distinction. Lynn E. Turner, the former SEC chief accountant, expressed similar concerns last year: “As the staff has been reviewing the goodwill impairment charges recorded by certain companies, I have been surprised by the number of those companies that have not separately identified intangible assets or have represented that they could not separately value them. Instead, they record goodwill for the entire excess purchase price in a business combination.”

Companies attempting to undervalue intangibles to avoid amortization can expect scrutiny from regulators and company stakeholders. The SEC has already stressed to business executives that purchase price allocations between intangibles and goodwill will be a key focus in financial statement reviews, and companies should anticipate requests for documentation to support the purchase price allocation in business combinations. “I expect that purchase price allocations between amortizable and nonamortizable intangibles will become a hot topic at the SEC,” says Spelker. “The allocation of purchase price is a real sleeper in the new FASB statement,” he adds. Weiner believes the SEC has always had a concern that companies were not assigning appropriate lives to all intangibles. Like Spelker, Weiner expects the SEC will pay close attention to how companies implement the new FASB standards on accounting for business combinations.

The business combination accounting changes will increase the importance of proper purchase price allocation between goodwill and intangibles. Companies want to treat their intellectual property portfolio as a valuable asset that supports long-term business strategies, so it is vital they accurately report its value. CPAs can help businesses understand that the new FASB pronouncements will assist them in maximizing benefits from an acquisition by clarifying balance sheet information relating to intangible assets. ■



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### Valuing Hi Tech Intellectual Property

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**By Dale Hogue, Snr***Download this article (64KB word doc)***I. Introduction.**

There is increasing attention placed on the value of intellectual property assets (IP) by companies. The financial community wants the value reflected in financial statements, and management wants to know the value of a principal asset. This summer new accounting rules (FASB 141, 142) were put in place to require that IP be valued in acquisitions rather than be subsumed in goodwill of the acquired firm. It is estimated that for the YR 2002, 87% of corporation value is in intangibles that include IP.

The frequent question asked of legal and accounting IP professionals is what is the worth of IP meaning, broadly, patents, trademarks, copyrights, trade secrets, know-how, etc. There is no ready answer because there is no ready market for IP, unlike tangible assets or securities that have a market. It is possible to place a value on IP as a contributor to revenue, or as a source of revenue from licensing, sale or tax benefit. When the value arises from use as a contributor to the enterprises' revenue, accurate valuations can be achieved by systematically identifying the IP with the source of revenue and measuring the IP's contribution to the revenue stream. It is also possible to indirectly value IP as a function of R&D and its contribution to the enterprise's revenue. IP in the pharmaceutical/biotech industry has clear value, as it protects the investment in a new drug or discovery. The value is evident as a drug comes off patent and the price falls in the face of generic competition. Likewise, consumer products such as Coca-Cola and Pepsi derive value from trademarks and secret formulas. So valuable was the asset that, at one time, Coke even pledged its trademark as security for a loan from Chase Manhattan. Consumer and industrial products also enjoy monopoly status during the life of a patent and can be priced accordingly. The high tech industry is different in that it usually does not have either a single or a handful of patents dominating a product or category of products. Rather, a new device or piece of software is composed of many components, each of which may be protected by patent, and the device or code as a whole. The short life cycle usually ends before the patents expire. Competitors may have their own patents covering comparable products.

Some high tech companies such as IBM and Texas Instruments

<b>Events</b>	have leveraged their extensive patent portfolios by aggressive licensing and report substantial royalty revenues, up to \$2B in IBM's case. Although IBM has imitators, by and large the high tech industry has not followed the licensing model during the tech boom. Increased patent litigation may signal the end to that period of relative patent peace as companies search for revenue and competitive advantage. Licensing and litigation may be on the rise.
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<b>SmartNetwork™</b>	
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<b>SmartDirectory™</b>	IP strategy is described in the simplest of terms as defensive versus offensive and, sometimes, as strategic or opportunistic. In a defensive posture, IP is used to protect investment in R&D or product development so that there is unfettered access to the market. In this scenario the contest is usually played out in the marketplace, not courts. An offensive strategy is one in which the IP is used to aggressively extract royalties or concessions from infringers, or push competitors out of the market. A strategic strategy is the use of the IP as a tool in business negotiations, strategic alliances, and joint ventures as an economic incentive. An opportunistic strategy is a mix of the previous strategies. For those interested in an in-depth discussion on the subject, there are many published works in the Licensing Executives Society papers.
Experts	
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<b>Press Room</b>	IP strategy has an impact on enterprise value, as it directly affects revenue. Pharma/Biotech companies sue infringers almost automatically to protect profit margins. Competitors expect to be sued if they make an infringing product. Citibank is a forerunner in using technology in the finance sector and a pioneer in patenting its innovative technology. Yet, it does not typically sue competitors. Perhaps the value of its IP is its superior IP position and freedom from competitors threatening to interfere with its business. IP can also be used to block competitors from a field, even if the owner does not enter it. There are examples of companies having invested in one technology and using acquired IP to block competition from new and different technology.
News Releases	
Coverage	All of these strategies are inherently aimed at the same target, the success of the business as measured by its financial performance or increased value. The contribution of IP to achieve these goals is a measure of its value.

### **III. IP Valuation Background.**

In the absence of a royalty, measurable attributable income, exchange for a value, or income preservation by a tax-deductible contribution, there is no uniform IP valuation approach. There is much attention being paid to the question of valuing an enterprise's IP estate by the accounting profession and academia. In particular, the NYU Stern School of Business, Vincent C. Ross Institute of Accounting Research, has an ongoing research project on intangibles led by Professor Baruch Lev. It is the source of current research on the subject. The project is being sponsored by major accounting firms and DuPont, Dow Chemical, Hewlett-Packard, Rockwell, and Skandia, among others. One of Professor Lev's research papers concluded that: "The absence of organized trading in intangibles has been a major hindrance to their recognition as an asset in financial reports."

<b>Events</b>	Economic circumstances, however, change fast and markets in intangibles, particularly in patents and know-how, are operating both off and on-line (Internet). We examine the most active of these markets - the licensing of patents and know-how - which has grown exponentially in recent years, focusing on information-relevance and valuation issue.'
<b>SmartNetwork™</b>	
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Coverage	As Prof. Lev says, royalty income from IP is important to a company's valuation, yet it is not usually produced. There are many reasons, one of which is the habit of overly cautious protection of licensing agreement content, arguably to keep it from the eyes of competitors. In reality, most professionals in the licensing field end up understanding the parameters of comparable deals from experience and networking. This non-public source of information is fairly accurate as to deal value for companies known to licensing professionals. Experts in the field collect this data and are a source of royalty rates and expectations. The trend is to make this valuable information public.

#### **IV. High Tech IP Valuation.**

The High Tech industry has historically been characterized by relatively high investment in R&D. Overall It has even increased during the recent downturn, there being exceptions such as some Japanese and Telecom companies. R&D expenditure as a percent of sales and per employee (while employee head counts are declining) is also generally heading up, an indicator that competition is more intense, and perhaps a reflection of a maturing market with intense technology competition. The by-product of this R&D investment is increased IP, which is the codified legal asset capturing the value of the R&D investment. The decision to protect that investment is some measure of its value by the company. The number of patents applied for and issued in a particular field should be a predictor of expected earnings from that technology. Conversely, the abandonment of patents through sale, non-payment of maintenance fees or donation to universities for tax benefit, is equally a negative signal for that technology, at least to its owner. Identifying products covered by IP (patents, copyrights, trademarks, etc.) allows value to be assigned to the IP as a component of the revenue associated with the product or service. Comparing products sold by competitors without IP protection or comparable products sold off patent or without brand identity allows the value of the IP to be measured. The following are approaches to measure IP value, including the author's own estimates of value based on R&D expenditures.

#### **Income**

IBM uses its IP to generate income. That is directly measurable and can be valued by projecting an income stream, adjusting for

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risk to the income stream, and applying a discount rate to get NPV. The income model may also be used when there is an offset in royalties in a cross licensing agreement, as measured by the amount saved in licensing fees. Likewise, the avoidance of payment of licensing royalties due to a defensive patent portfolio is measurable as a saved cost when calculated over time and given an NPV. All of these methods have as characteristics either an income stream or cost avoided, both of which are measurable.

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**Margins**  
 Intrusion into an IP-protected market by competitors directly challenges margins through price erosion. A strong IP portfolio can either deter direct competition or be used to tax infringers or put them out of the protected market. Both the actual use and the threatened use of IP in infringement litigation can have the same effect. The skill of management in using its asset to protect its turf has a direct bearing on the value of the IP estate. In this scenario, the negative effect on margins is akin to a drug going off patent. The loss in value is measurable and calculable over time. Using a measure of the time value of money lost, such as NPV, a value on an IP estate as a financial asset is determinable.

### R&D Expenditures

The level of R&D expenditures by a company vis-à-vis its competitors, and as an historical reference to its own R&D, is a predictor of future revenue, assuming that the company has been a successful innovator or has acquired that capability. If it is an efficient R&D innovator, that efficiency is reflected in its margins for IP-protected products. Once a ratio is established between R&D and IP-protected product/service margins, increases or decreases in R&D spending should reflect future margins or at least indicate direction.

### Sales

Companies culling their portfolios for a variety of reasons abandon, sell or license IP. Internet exchanges are available for IP sales. Their effectiveness is hard to evaluate. The more conventional sales method is time tested and is done through brokers. Typically a valuation is performed and the market potential analyzed for potential buyers based on holes in their IP portfolio or as licensing vehicles. Valuations are based on value to the enterprise to avoid the cost of infringement litigation and/or payment of licensing royalties, or as an income producer from licensing royalties, enhanced market position, or protected margins.

The author has sold IP for clients, and in the process, priced the IP and negotiated the sale. In the process, there are patterns and practices that have emerged as to pricing and negotiations. When used to generate income from licensing, the value is a discount from expected income adjusted for patent risk and time value of money. A ROI calculation to support the licensing effort is typically made and the value additionally adjusted. This tends to be the upper limit of the price for the asset. Some patents are acquired for defensive purposes and are put in portfolios as defensive chips. These tend to have lesser value, and are in the range of \$100-250K, depending on the size of the portfolio and the coverage of the patents.

### Time to Market

<b>Events</b>	Another way to value an IP estate is to approximate the cost and time for a competitor to replicate the investment to place it in the same position to produce the goods covered by the IP. In a fast-paced tech environment, the time factor alone is of huge value.
SmartNet 2004	
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<b>Resources</b>	<b>V. IP Valuation Metrics.</b>
Articles	There are indicators of IP value in the absence of published company data and even with that data. Analysts should ask the questions such as:
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Experts	1. What technology is being patented or abandoned by non-payment of annuities, donation, or sale;
Services	2. What is the present and projected IP royalty income and its stability;
<b>Press Room</b>	3. Are there infringers and, if so, what will be done about them;
News Releases	4. Who is competing for patents in the same technology space;
Coverage	5. What are the relative positions of each competitor's patent portfolio vis-à-vis one another as to strength and dominance, i.e., who owes what to whom if there is an infringement issue;
	6. What is the company's patent litigation history, i.e., do the company's patents tend to hold up and, therefore, be respected by competition;
	7. What is the average cost per patent, is it below the industry average, indicating poor quality for lack of investment; and
	8. What is the number of invention disclosures and patents per R&D \$, and how does that compare to the industry average?
	Most companies can answer these questions if they are serious about their IP estates. If they can't, then a fair inference is that management has not focused on these assets and is unlikely to extract value from them.

**VI. Conclusion.**

Management is the crucial element in the value of IP, assuming that the codified IP captures valuable R&D. The process of inquiring into a company's IP estate will give insight into how management views its IP and its plans for its use. Whether the IP strategy is offensive, defensive, strategic, or some variation thereof, the fact that the asset is being employed for a business objective gives it value. How well that card is played will determine its ultimate value. In the absence of published data on royalties and licensing arrangements, inquiry into management IP plans is perhaps the only way to fully understand the IP value. Public data on IP trends, such as R&D expenditures, patents issued, and infringement litigation may predict the value of the underlying IP, and, as a trend, can predict future income and value for a high tech enterprise.

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### **Valuation Methodologies**

Traditional methods of valuing tangible assets such as gross book value, net book value, and replacement costs do not readily apply to intangibles such as IP. One approach to valuing intangibles is to approximate their economic value (EV) as reflected in the present value of future cash flows. Other methods are Economic Value Added (EVA) and Market Value Added (MVA), which measures the EV of intangibles as a contributor to future income. EVA is more readily used in pharmaceutical and biotech companies with patent portfolios dedicated to a drug, therapeutic, or medical device line. Price erosion is readily measurable once the products come off patent.

IP licenses are susceptible to valuation based on various economic models that value their royalty streams. Essentially, the income stream is calculated over a period of years, and then a discount rate is applied based on the period and the stability of the income stream. In effect, a risk value is assigned by the discount rate.

Even though there are no uniform measurements of IP valuation, some of the methodologies are useful in approximating value. They are discussed below.

#### **1. Net Present Value.**

Risk and return are the basis upon which rational and intelligent investment decisions are made. Risk is a measure of volatility or uncertainty of returns. Returns are the expected receipts or cash flow expected from an investment. Investment analysts take the IP estate into account when assigning a value to projected income stream as a hedge against disruption of income. Fluctuations in projected income streams are accounted for by using higher discount rates. This, in turn, results in lower Net Present Value (NPV) of the firm's equity. In this way, associated risk is accounted for in the valuation of a going enterprise. Obviously, a stable rate of return is preferred and warrants the most favorable discount rate.

#### **2. Return on Investment (ROI) and Return on Equity (ROE).**

The characteristics associated with ROI or ROE are autonomous operations; free access to vendors and customers; separate revenues and costs; and management design. Typically, unless an IP estate is set up as a separate profit center, ROI and ROE are not appropriate measurements of performance. If, however, an IP estate is set up as a separate profit center, then ROI and ROE may be used as measurement tools.

#### **3. Return on Assets (ROA).**

Return on assets measures operating efficiency (ROA = Operating Income/Average Total Assets). The average total assets are measured by taking the sum of the beginning and ending balance sheet amount and dividing by two. Some analysts use either the beginning or ending asset value. There needs to be operating income attributable to an activity to use this measure of performance. It is most often used to measure a company's overall performance or a measure the overall performance of a

<b>Events</b>	division which has separate financial reporting statements. It may be used if there is a separate IP holding company or licensing activity.
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Join	<b>4. Economic Value Added (EVA).</b> "EVA is net operating profits minus appropriate charge for the opportunity cost of capital invested in an enterprise." It is an estimate of the amount by which earnings exceed or fall short of the required minimum rate of return that shareholders and lenders could get by investing in other securities of comparable risk.
<b>Resources</b>	
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Recommendations	<b>5. Market Economic Value (MVA).</b> MVA is the difference between what investors put into a business and what they could take out at any given time. MVA includes the valuation given for future income growth.
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Coverage	<b>6. Licensed Value.</b> A licensed IP estate may be valued on its income. The income over the life of the patent estate is determined and a present value (PV) calculation is performed. A discount rate is applied to the PV to reflect the stability (risk) of the income stream. If the estate is not licensed, then a calculation is made as if it were licensed, the value determined, and an imputed cross-licensing fee is subtracted if appropriate. An example of a fully licensed valuation is the value put on IBM's patent portfolio in 2001 as a function of average annual revenue over the number of patents in the estate treating all equally in value.
	<b>7. R&amp;D Value.</b> R&D is valued in relation to earnings and revenue for technology companies. If revenue and earnings do not increase in response to R&D expenditures, the expenditure is negative and penalizes future earnings estimates. Loss of the market advantage from R&D by virtue of copying devalues R&D. Pharmaceutical and biotech companies experience loss of value from copying, especially when drugs go generic. They are also characterized as long-life-cycle products. Copying in the software industry is yet another example of lost R&D value. Shorter cycle products, such as in the computer and electronic industry, are less sensitive to profit erosion from copying and are more likely to be impacted at the end of the product cycle as competition erodes profit margins.
	<b>8. Deterrence Value.</b> IP estates are believed to have value by deterring copying and forcing competitors to either design around the protected product to avoid direct infringement or avoid direct competition. The benefit to the IP estate owner is to protect the market for their product from price and technical competition. Competitors cannot supply the same product and so must compete with different technologies or take the risk of an infringement suit. The value is the difference between the earnings from a protected product less the earnings without IP protection. This is expressed as DV = Protected Profits - Unprotected Profits. Looking at aged technologies and measuring profit erosion as competition enters the market at the end of the IP protection cycle can estimate unprotected Profits. A case in point is Johnson & Johnson's experience with Tylenol as it came off of patent. The monopoly pricing of the drug was readily apparent as the unprotected profit

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plummeted. Product managers are able to estimate the price erosion from their experience. Another example is Hewlett-Packard protecting its lucrative replacement ink cartridge market from competition. Hewlett-Packard used its patent portfolio to close down infringers and protect its margins.

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## ARTICLES

**The George Washington University Law School Corporate & Business Law Journal**  
*The Effective Management and Value Maximization of Intellectual Property*  
 By Justin E. Pierce  
 April 1, 2000

### I. INTELLECTUAL PROPERTY IS NO LONGER JUST A LEGAL MATTER

Until recently, chief executives and business managers considered intellectual property issues as merely legal matters best left to their corporate legal departments. The rapid growth of the knowledge economy, however, has spawned a corresponding explosion in the growth in value and scope of intellectual assets. Entrepreneurs and executives alike constantly strive to achieve competitive business advantages and maximize shareholder wealth. In pursuit of these objectives is a clear understanding of how to unleash the full value of patents, trademarks, and copyrights.

Companies that strategically manage their intellectual property portfolios, using them as financial instruments instead of just legal instruments, can achieve commercial success and maximize shareholder wealth. For example, IBM boosted annual patent-licensing royalties by an incredible 3,300%, from \$300 million in 1990 to \$1 billion a year in 1999, demonstrating the power of an effective intellectual property management strategy.<sup>1</sup> Additionally, it is important for companies to manage their intellectual property portfolios to ensure that they are not only generating revenue through licensing, but also maintaining a healthy cash flow. For instance, Merrill Lynch, Xerox, and Pitney Bowes have recently hired high-level patent specialists to help build their intellectual property portfolios and increase their licensing revenues. Some companies are taking advantage of technology improvements in software and process automation to streamline the patent application process.<sup>2</sup> Human Genome Sciences (HGS), a biotechnology company that patents genes for licensing to drug manufacturers, has reduced its patent application process from an average of 24 months to less than 6 months by using an automated patent-application process. HGS cuts months off the typically lengthy patent application process (the average patent pendency period is 2.4 years from application to issuance<sup>3</sup>) using proprietary software that captures information from the patent applications.

The United States Patent & Trademark Office (USPTO) issues approximately 170,000 patents per year,<sup>5</sup> and this number will continue to grow as more companies turn to e-commerce and software patent applications. The pace of applications for electronic business patents surged since the 1998 Unocal Corp. v. U.S. Patent & Trademark Office decision removed the barrier to patenting business methods.<sup>6</sup> The Patent Office expects to grant over 300 patents for business methods by the end of 2000. Companies now use automated data-mining and 3-D patent mapping software from companies like Aurigin Systems to sort through the myriad of patent applications. Patent mapping shows companies where patents are clustered in their respective industries and the identities of the inventors. This information is valuable for companies in searching for acquisition targets and can be a powerful source of competitive intelligence. Because of the growing importance of intellectual property in today's knowledge-based economy, corporate executives and entrepreneurs alike, must establish effective strategies for managing their company's intellectual property value.

This paper provides an overview of the business and legal issues associated with the current corporate trend towards more sophisticated intellectual property management and intellectual property valuation. This paper primarily concentrates on patents as opposed to copyrights, trademarks, or trade secrets.

### II. EFFECTIVE INTELLECTUAL PROPERTY MANAGEMENT

#### A. The First Step: The Intellectual Property Audit

The first step towards developing an effective intellectual property strategy is the conduct of a company-wide intellectual property audit. This audit involves the coordination of a wide range of players: legal counsel, corporate planners, financial staff, research and development managers, senior management, scientists, marketing staff, and licensing staff. These groups should operate together in a well-documented and fluid process. Identifying all of a company's core intangible assets that currently or could bring value to a company allows management to create an effective intellectual property strategy that coincides with company objectives and priorities.

The traditional auditing procedure usually evaluates the following assets for inclusion on the company financial statement: land, buildings and fixtures; inventories; furniture and equipment; plant and machinery; financial instruments; and accounts receivable. The financial statement of the company may be incomplete and understated if it fails to provide a realistic appraisal of the company's intangible intellectual property assets—trademarks, copyrights, trade secrets and their associated goodwill. Unfortunately, few companies conduct audits of their intellectual property assets that realistically evaluate the value of these assets and ensure that these assets are well-managed and protected.

To correct this problem the intellectual property audit should be undertaken to: (1) determine the origin of the intellectual property assets; (2) determine the ownership interest in the intellectual property rights of these assets; (3) determine the scope of intellectual property rights that any third party may have in these assets; (4) evaluate the company's policies and procedures for creating and protecting its intellectual property rights in its intellectual property assets; (5) identify any defects in existing intellectual property assets that have diminished or may in the future diminish the value of these assets; (6) institute corrective measures to eliminate any defects that affect the value of these assets; (7) provide recommendations that will help restore the full value to any flawed intellectual property assets; (8) recommend new policies and procedures that will provide more expansive protection for the future creation and management of intellectual property assets; (9) preclude or lessen the potential liability from third party infringement claims that may result from the company's new product; and (10) obtain a realistic financial valuation of the company's intellectual property assets.<sup>9</sup>

Upon completion of the audit, management should expect a written audit report that contains the following: (1) an intellectual property asset in the company's complete intellectual property asset portfolio; (2) a narrative on the development history of specific products/product lines; (3) company's intellectual property policies and procedures for the protection and management of its intellectual property assets, along with recommendations for modification, and, where necessary, the implementation of additional policies and procedures; (4) an evaluation of the company's various intellectual property creation, acquisition and licensing agreements, along with recommendations for the modification and, if necessary, preparation of new agreements; (5) description and evaluation of intellectual property asset defects discovered during the audit; (6) recommendations for specific remedial action to correct intellectual property asset defects; (7) recommendations for new or expanded employee training programs that will better enable the company to understand the importance of the company's intellectual property policies and procedures and the employee's need to adhere to them; and (8) response information needs required by the company requesting the intellectual property audit.<sup>10</sup>

If the company conducts an intellectual property audit in the context of an acquisition transaction, the audit report should provide the information to decide whether the rights available in the acquisition are actually all of the rights required by the acquiring party. Furthermore the report should value the rights acquired.<sup>11</sup>

#### **B. Management Considerations**

After the intellectual property audit, managing the company's intellectual property that protects core products and services requires aggressive thinking. The most important intellectual property management considerations typically revolve around protecting core technologies and business acquiring intellectual property to boost R&D efforts, and anticipating shifts in technology and market demand.<sup>12</sup>

##### **1. Protecting core technologies and business methods.**

Most companies focus their strategies on protecting the proprietary technology that gives their products and services an edge against competition. Carlson's xerography patents allowed Xerox to control the copier market for almost twenty years, resulting in double-digit margins and earnings, however, had to license the xerography technology under a federal consent decree in 1975.<sup>14</sup> As a result, the company saw its market share dominance dissipate.

Some companies, however, focus more on an innovative method of doing business instead of a product line or service. Dell Computer, for instance, succeeded in the personal computer business to its innovative "build to order" direct-sales business model. Dell's advantage does not lie in the computers, but in its unique system for selling, distributing, and servicing Dell computers.<sup>15</sup> Likewise, Wal-Mart owes its \$138 billion per year in sophisticated purchasing, marketing, and distribution systems, instead of its products.<sup>16</sup> Wal-Mart's systems enable the company to operate and maintain lower prices, and satisfy a higher rate of customers than its competitors.

Despite the great success of Dell and Wal-Mart within their respective industries, there is a difference in how they maintain and use their competitive advantages. Thus far, Dell has secured 42 issued and pending patents on its unique business model.<sup>17</sup> These patents, in addition to covering the customer ordering system, cover the method in which the system integrates with Dell's "continuous flow" manufacturing, inventory, distribution, and customer operations.<sup>18</sup> Dell, may or may not use these patents in an infringement suit with direct-sales rival Compaq. Dell, however, has already used its potential rival IBM in another way. To strengthen its market advantage in 1999, Dell used its patents as collateral in a \$16 billion cross-licensing agreement that provides Dell with lower cost computer components.<sup>19</sup> This freed Dell from having to pay IBM several millions of dollars in royalties and furthered its success in the personal computer business. On the other hand, Wal-Mart has not secured patents on its business model. Wal-Mart, however, relies on the protections of trade secret law to maintain its competitive advantage. Intellectual property experts generally consider trade secret law as an ineffective protection against the loss of proprietary information from potential competitors. Wal-Mart, for example, may not be able to prevent former key employees from taking their knowledge of Wal-Mart's systems to potential online competitors like Amazon.com.<sup>20</sup>

Regardless of whether it's the technology associated with a product or service, companies must ensure that they protect and maximize use of a business method that provides them with a distinct advantage over competitors.

##### **2. Acquiring intellectual property to boosting R&D efforts.**

Although most technology businesses have their own IP assets, nearly all, 88%, also seek synergies by acquiring intellectual property from others. A recent study by PricewaterhouseCoopers<sup>21</sup> These businesses view the acquisition of intellectual property from others as a way to improve their competitive position in a highly competitive market. Furthermore, acquisition helps reduce the risks of conducting expensive high-tech R&D development alone. It is often more time efficient for a company to buy new technology than to develop it internally.

Companies use several strategies for acquiring intellectual property. Sixty percent of technology businesses license technologies or intellectual property from others. This includes 65% of large technology businesses and 55% of smaller ones, and is more prevalent among service businesses (65%) and those that do business internationally (63%).<sup>22</sup> Among those companies licensing from others, 85% claim this strategy plays an important role in their own new product development efforts.<sup>23</sup> An estimated 36% of technology companies are involved in joint ventures where the partners share the risks, costs and profits from their intellectual assets.<sup>24</sup> Of those companies participating in these joint ventures, 73% claim that they are a growing part of their business.<sup>25</sup> Two-thirds of technology companies invest in smaller, independent businesses as an extension of their own R&D efforts.<sup>26</sup> And, nearly two-thirds (63%) of technology companies expect to increase their involvement in this type of activity over the next year.<sup>27</sup>

Acquisitions of intellectual property take on a heightened level of importance in the software industry. A software company may have a patent that is useful for only 18 months.<sup>28</sup> If new features can be developed by implementing these strategies, acquisitions generally result in both protecting the patent and extending the life of the product. Additionally, 44% of technology companies say it is more attractive for them to acquire strategic intellectual property than to rely strictly on internal development or licensing as a source of new products.<sup>29</sup> One of the main attractions of strategic acquisitions is speed. Companies say it's faster to buy than make.<sup>30</sup> Speed to market is important to the performance of technology businesses. Nearly half (47%) of technology companies surveyed by PricewaterhouseCoopers say their business brings new ideas to market faster than competitors.<sup>31</sup> Only 15% rated their business as slow to market. Some companies said their track records are comparable to others.<sup>32</sup> Those that are faster expect significantly stronger revenue growth over the next year, 32% said they expect a 60% edge.<sup>33</sup> Companies point to other benefits as well, 48% say that a benefit of acquiring is being more certain of what they are getting.

is less expensive to buy than make.<sup>34</sup>

### **3. Anticipating challenges, shifts in technology and market demand**

Recently corporations have found that training their executives on managing intellectual property can improve management performance in non-critical events that a company may face. Denzemeyer & Co. recently announced the development of an intellectual property simulation.<sup>35</sup> The simulation is like a "war game" format that enables participants to experience the challenges of several company threaten scenarios that test the agility of management. The simulation presents a series of crisis events: competitors rolling out a better product that threatens sales and market position. Analyst challenges the company's quarterly earnings forecast, the company receives a letter from its leading competitor charging patent infringement. Participating executives get a direct challenge in dealing with the speed necessary to make decisions using knowledge-based systems and to accelerate their transformation of knowledge to net worth. According to the National Knowledge & Intellectual Property Management Taskforce, simulation, "[i]ntangible assets comprised an estimated 73% of collective net worth in 1999, making intangible asset management a core concern for the department, the executive suite and boardroom...<sup>37</sup>" Even the most thorough product development plans and market strategies will not prevent share and margin erosion if a company is not prepared for company-threatening events. Implementing a patent strategy and training management in simulation exercises will ensure that a company can successfully anticipate technology shifts, competitive products, and market demand.

Finally, a growing consideration for corporate managers is the threat of management and board of director liability through shareholder lawsuits over intellectual property. Directors may be liable for failing to make the best effort to guide research and development away from infringement problems or to conduct a thorough intellectual property audit.<sup>38</sup>

### **C. Considerations For E-Commerce Companies**

Strategic management of intellectual property allows companies to achieve defensible proprietary market advantages over competitors. Many commentators traditionally thought market advantage went to the first company to market. The Internet, however, bring e-companies less cost advantages and allows for rapid economies of scale, and blurs industry boundaries. This development means that patents may become the most effective and defensible e-commerce market advantage.

Several companies are in a rush to secure patents that involve Internet technologies or business methods, despite criticism that the patents are overbroad and unlikely to hold up in court. Open Market, Inc. obtained patents relating to an electronic shopping cart and real-time payment for Internet transactions.<sup>39</sup> These patent cover virtually every e-commerce site already in existence on the Internet that uses electronic shopping carts and electronic payment systems. If these patents hold up against future infringement and invalidity suits, however, they will prove powerful tools for overwhelming e-commerce market dominance. A patent is expected to issue soon that may give NextCard Inc., a financial services company a share of e-commerce transactions. A recent NextCard press release announced that the company received a "notice of allowance" from the U.S. Patent Office application covering the issuance of online credit. Usually, receipt of this notice is a precursor to likely patent issuance. NextCard immediately applied for a patent site that such a patent could offer up to "a 12 to 24 competitive advantage".<sup>40</sup> LaunchPad applied for patents for GuaranteedClicks, a method of connecting a computer to a specific Internet address while an e-mail recipient is watching a video file. The web site, at [www.guaranteedclicks.com](http://www.guaranteedclicks.com), promises "get obscene volumes of web traffic."<sup>41</sup> Issuance of these patents would allow LaunchPad and NextCard to establish defensible proprietary rights against rivals looking to enter similar markets.

Companies with e-commerce patents especially, can use them offensively against rivals and not just for defending proprietary market share. Amazon.com, the upstart Internet bookseller, recently faced a threat to its online book sales market share from similar online competitors. An application for its "1-Click" system for processing customer orders<sup>42</sup>, which is now widely copied by other Internet retailers. Amazon used that patent as (to ensure and increase its proprietary market share and advantage), filing an infringement suit against its chief rival, Internet bookseller Barnes & Noble in 1999. Priceline.com provides another example of offensive patent use in the e-commerce industry. Much of Priceline.com's shareholder value was publicized "name your own price" reverse auction patent.<sup>43</sup> The company recently filed an infringement suit against Microsoft for devising a software program demonstrating the company's intent to use the patent as weapon to keep rivals from gaining ground in its market.

### **D. Products And Services That Facilitate Intellectual Property Management**

There are a number of software products on the market that can help in intellectual property management activities. To build a comprehensive intellectual property management system, the company's management processes requires each company individually to map the activities and users it is trying to link together and then tailor the system for its specific needs. There is, however, no single computer program or system available that provides an automated solution for every phase of intellectual property management.

Intellectual property management software manufacturers claim that their products can solve nearly all intellectual property management problems. Many of the products available today are complementary; they are very powerful when used collectively. The technology available, however, is only the place of an intelligent, coordinated, and visionary intellectual property strategy and business plan. Most intellectual property software manufacturers believe that the most effective way to utilize these products is throughout the company, rather than solely in the hands of a few engineers or a few lawyers. There are five major software products to support intellectual property management activities: Invention Machine Corp., Aurigin Systems, Manning & Napier Information Systems (MNIS), Computer Packages Inc., and Master Data Center.

Aurigin Systems, the leading provider of intellectual asset management solutions, created Aureka™, an enterprise and Internet-enabled software that organizations to manage their intellectual property. They have created an automated system that can provide a platform (Aureka 7.0 Foundation) for organizing, analyzing, and visualizing patents across an industry, for conducting patent audits, and for uncovering competitor's strategies.<sup>44</sup> What used to take several months can now be finished in hours. More importantly, data from text documents (extensive and lengthy patent applications) can now be displayed in 3-D presentations that more clearly illuminate current patterns and relationships in technology developments.

## **III. INTELLECTUAL PROPERTY VALUATION ISSUES**

The value that intellectual property brings to a company's core product or service is the *embedded value*. It generates revenue for a company, fees and protects part, or all, of the product or service market share from encroaching products or services sold by competitors. Furthermore,

property assets can be exchanged, sold, transferred, and traded, non-core intellectual property (innovations that do not complement or enhance product or service) still has *direct value* to other companies that may find the technology useful. Companies can improve their financial performance on their intellectual property assets. To successfully leverage these assets, however, companies must accurately assess the financial value of their patents. Furthermore, business-minded intellectual property managers are becoming more focused on using their intellectual property assets to generate direct value and revenue from non-core patents by using the emerging intellectual property marketplace.

#### **A. Improving Financial Performance**

Today, almost all companies' largest assets are intangible. This occurs not just in technology businesses, but in "old-economy" industrial and service businesses. As previously discussed, most companies still under-utilize their intellectual assets, despite the pressures today's economy to maximize return. Companies can mine their intellectual property portfolios for revenues to improve their financial performance in several ways.

Revenues from licensing patents have risen sharply in the past ten years, increasing from \$15 billion in 1990 to more than \$110 billion today. This is an excellent example of a company that benefits from patent licensing. According to some experts the licensing market is still in its infancy with revenues to reach a half-trillion dollars annually within ten years.<sup>45</sup> Patents can also generate revenue through use as a vehicle for corporate boutique investment banking firm, Global Asset Capital publicized plans to securitize the future royalties of drug company patents and sell them on Wall Street. The market is also taking heed to the effect patents can have on a company's earning potential. Some stock analysts have begun looking at a company's intellectual property capabilities when evaluating earnings potential and competitive prospects. As more investors take this approach, the effect of a well-managed portfolio on a company's market value will only increase.<sup>47</sup>

#### **B. Determining Valuation**

Determining the actual worth of a company's patents can be difficult. Valuation methods for intangible assets are not very developed and are often the subject of a lot of debate. There are few market-based guidelines for valuation of core patents because these patents generally are not the subject of commercial value of the product or business, hence the embedded value. Most companies, however, find non-core patents are easier to value and license to others.

Companies use different methods to value their patents. Some companies use the Tech Factor Method (created by Arthur D. Little consultant) which quantifies the monetary contribution of each patent as a percentage of the business's total net present value. A Rand Corporation study sets this value as equivalent to a research & development cash subsidy rate of up to 25%.<sup>48</sup> Moreover, some companies assign a portion of their total market value as proxy for their intellectual property value. Generally, this value (considered the knowledge assets value) is the difference between a company's book value and market value.<sup>49</sup> Critics of this approach, however, point out that this method assumes that book assets have no value in excess of their reported value because a company's market value is subject to daily stock market volatility, the knowledge asset value will fluctuate in a way that does not correspond to the underlying value of the company's assets themselves.<sup>51</sup>

Several researchers within the economics and finance fields have initiated efforts to track and measure the value of intellectual property at national levels.<sup>52</sup> Researchers have devised methods for ranking and valuing a company's patents, that can be used to pick potential market opportunities and identify shifts in strategic focus.<sup>53</sup> Francis Narin, a noted technology firm researcher, devised a method to evaluate a company's technological strength based on three variables: 1) the number of times that other patents cite that company's patent, 2) the number of scientific papers cited in each patent, and 3) the median age of the patents cited in all of the company's patents. These variables represent how particular patent is within its field, and quantify the innovation of a company's technology.<sup>54</sup> Narin recently teamed with New York University finance professor Baruch Lev and doctoral candidate Zhen Deng to determine whether technological strength itself is an indicator of a company's future financial success. The study indicated that a company whose portfolio contains highly cited, science-rich patents is likely generating innovative technology, and provides a competitive advantage that will show up in future stock prices and market-to-book ratios.<sup>56</sup>

During the Narin-Lev-Deng study, the researchers used an approach called the Knowledge Capital Scorecard to find companies' intellectual property value. They determined the value of a company's intellectual property, subtract the company's earnings from tangible and financial assets from the company's total earnings.<sup>58</sup> The remainder is the earnings generated by knowledge assets. Dividing this amount by the knowledge capital discount rate (the cost of capital for assets in the software, biotech, and pharmaceutical industries is 10.5%) results in the value of the company's intellectual property.<sup>59</sup>

Alternatively, a Pasadena, California web-based company called the Patent & License Exchange ([pl-x.com](http://pl-x.com)) promotes the creation of a new standard for valuing intellectual property. Patent & License Exchange equates patents to call options – rights to future cash flow from an asset that may or may not be used. Using the Black-Scholes equation<sup>60</sup> to value a patent, Patent & License Exchange replaced a call option's variables with the price and volatility of the underlying technology, the development costs and time remaining, and baseline capital costs. To determine the price of technology that has not yet been commercialized, Patent & License Exchange looks at small-cap, pure-play companies with similar technology, whose enterprise value is already in the market.<sup>61</sup> This method, however, does have weaknesses. Small-cap, pure-play technology companies are often illiquid or volatile themselves, making an accurate value for patents.<sup>62</sup> Further, it is difficult to accurately value one-of-a-kind breakthrough technologies. The financial value of such technologies cannot be more accurately determined on a case-by-case basis by experts who can assess whether a technology could actually create an entire new industry. Despite this imprecision, the price given by using the Black-Scholes method does give a viable starting point in negotiations between parties in any transaction involving patents.

#### **C. The Emerging Intellectual Property Marketplace**

Currently, markets for trading patents (or other intellectual property assets) are still nascent and have yet to provide reliable valuation benchmarks. The aforementioned Patent License & Exchange, PatentAuction.com, Ipx.net, Yet2.com, and IPNetwork.com post information about patents on the Internet. Some provide a limited degree of transaction support. Patent License & Exchange, Yet2.com, and IPNetwork.com are racing to become the first major open marketplace for buying, selling, and licensing intellectual property. Both Patent License & Exchange and Yet2.com have received support from several major companies. More than 460 companies, universities, and research centers have become Patent License & Exchange members. Yet2.com has the backing of corporations like DuPont, 3M, Boeing, Dow, Ford, Polaroid, Siemens, Toyota, and Toshiba. Corporations, motivated by the desire to make money on patents "that are just sitting on the shelves", have begun to list several of their patents for sale on Internet-based intellectual property marketplaces. Furthermore, the efficiency of acquiring technology online reduces the transaction costs usually associated with buying or licensing intellectual property.

property from other companies. Because of these benefits, more and more companies will participate in the intellectual property marketplace. As the market inevitably matures, it will provide more reliable benchmarks for intellectual property valuation.

#### IV. CONCLUSION

Today, old and new-economy companies can not afford to view intellectual property as strictly a legal issue. Effective management of a company's assets directly correlates to business success in a knowledge-based economy. In some cases, particularly with e-commerce companies, managing the company's business model is paramount for survival. Most companies around the globe have yet to unlock billions of dollars in intellectual property. According to the consulting firm British Technology Group, just 3% of global intellectual property's commercial potential was realized in the US, that translates into roughly \$110 billion out of a \$3 trillion total commercial potential.<sup>64</sup> More companies, however, will seek to maximize their intellectual property portfolios through licensing, selling, or acquiring technology. As more companies leverage patents, a more mature intellectual property market will develop and provide a more reliable valuation benchmark for the eventual securitization of intellectual property assets. Intellectual property will be the driving force behind commercial success in the future, companies that do not effectively manage their intellectual property assets risk that do.

<sup>1</sup> David Kline, Discovering New Value in Intellectual Property, HARV. BUS. REV., Jan.-Feb. 2000, at 55. <sup>2</sup> Id. <sup>3</sup> Pamela L. Moore, For Barely Used, BUS. WK., April 3, 2000, at 80. <sup>4</sup> Victoria Slind-Flor, The Biz-Method Patent Rush, NAT'L L. J., (Feb. 28, 2000). <sup>5</sup> Pamela L. Moore, Great Ideas, Barely Used, BUS. WK., April 3, 2000, at 80. <sup>6</sup> State Street Bank v. Signature Financial Group, 149 F.3d 1368 (1998). <sup>7</sup> U.S. Patent & Trademark Office. <sup>8</sup> This paper concentrates on patents because, excluding entertainment and media companies (where copyright considerations prevail), patents have the most significant impact on a company's market value in today's knowledge-based economy. <sup>9</sup> Lloyd R. Rich, Why An Organization Needs An Intellectual Property Strategy, 12 FEB COLO. LAW. 37 (1996). <sup>10</sup> Id. at 38. <sup>11</sup> Id. <sup>12</sup> David Kline, Discovering New Value in Intellectual Property, HARV. BUS. REV., Jan.-Feb. 2000, at 55. <sup>13</sup> Id. at 56. <sup>14</sup> Id. <sup>15</sup> Id. <sup>16</sup> Id. <sup>17</sup> Id. <sup>18</sup> Id. <sup>19</sup> Id. <sup>20</sup> See Aileen Crowley, Lawsuit brings focus to noncompete contracts, Wal-Mart Week, Apr. 19, 1999, at 115. <sup>21</sup> The Technology Barometer (PricewaterhouseCoopers), Dec. 1, 1999, at 2. <sup>22</sup> Id. <sup>23</sup> Id. <sup>24</sup> Id. <sup>25</sup> Id. <sup>26</sup> Id. <sup>27</sup> Id. <sup>28</sup> Id. <sup>29</sup> Id. <sup>30</sup> Id. <sup>31</sup> Id. <sup>32</sup> Id. <sup>33</sup> Id. <sup>34</sup> Id. <sup>35</sup> Business Wire, April 10, 2000. <sup>36</sup> Id. <sup>37</sup> Id. <sup>38</sup> See Steven Bochner and Susan Krause, Intellectual Management and Board Liability, 1065 PLI/Corp 453 (1998). <sup>39</sup> U.S. Patent Nos. 5,715,314 and 5,724,424. <sup>40</sup> NextCard Inc. February 21, 1999. <sup>41</sup> See . <sup>42</sup> U.S. Patent Nos. 5,715,399 and 5,727,163. <sup>43</sup> U.S. Patent No. 5,794,207. <sup>44</sup> PR Newswire, Aurigin Systems Inc., Press Release, Feb. 21, 1999. <sup>45</sup> David Kline, Discovering New Value in Intellectual Property, HARV. BUS. REV., Jan.-Feb. 2000, at 58. <sup>46</sup> Id. at 60. <sup>47</sup> Id. at 65. <sup>48</sup> Id. <sup>49</sup> Id. <sup>50</sup> Id. <sup>51</sup> Id. at 65. <sup>52</sup> In 1998, Professors Michael Porter of Harvard Business School and Scott Stern of MIT devised the National Innovation Index, an analysis of intellectual asset development in twenty-five nations. The index takes into account variables like the number of international patent applications, the amount of R&D spending, and the share of gross domestic product spent on higher education. See Robert Buder, In Search Of Innovation, Technology Review, Nov.-Dec. 1999, at 42. <sup>53</sup> Robert Buder, In Search Of Innovation, Technology Review, Nov.-Dec. 1999, at 44. <sup>54</sup> Id. <sup>55</sup> Id. at 44. <sup>56</sup> Id. <sup>57</sup> David Kline, Discovering New Value in Intellectual Property, HARV. BUS. REV., Jan.-Feb. 2000, at 65. <sup>58</sup> Id. <sup>59</sup> Id. <sup>60</sup> The Black Scholes equation for calculating option pricing was created in 1973 by Myron Scholes and Fisher Black. The equation factors in the price and volatility of the underlying stock, the time to exercise, the risk-free interest rate, and the baseline risk-free cost of capital. <sup>61</sup> Michael Stroud, Invisible, Inc., Business 2.0, Apr. 2000, at 287. <sup>62</sup> Michael Stroud, Invisible, Inc., Business 2.0, April 2000, Michael Stroud, p.285.

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# The Challenge of Valuing Intellectual Property Assets

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- ¶ 1 The collapse of Enron Corporation and WorldCom in 2001 and 2002, respectively, resulted in a wave of shareholder litigation and prompted sweeping statutory and regulatory reforms. This series of events lead to the enactment of the Sarbanes-Oxley Act ("SOA"),<sup>1</sup> which is designed to increase accountability of a company's executive officers, directors, auditors, and counsel. For example, under the SOA each periodic report filed by a public company must include a certification by the company's chief executive officer and chief financial officer (or the equivalent). This certification is used to indicate that the report fully complies with the periodic reporting requirements of the Securities Exchange Act of 1934, as amended. Additionally, the officers must certify that the information fairly presents, in all material respects, the company's financial condition and result of operations.<sup>2</sup>
- ¶ 2 With increased skepticism of companies' financial conditions and the promulgation of stricter laws and regulations, such as the certification requirements of Sarbanes-Oxley, the value attributed to a company's assets is more closely scrutinized. One area of a company's assets that is often difficult to value is its intellectual property ("IP") assets. How can a CEO and/or CFO of a public company feel comfortable certifying a report that attributes value to the company's IP assets? That is, how can a CEO and/or CFO feel comfortable that the value attributed to the company's IP assets fairly presents the company's financial condition with regard to those assets?
- ¶ 3 Valuing IP assets requires that a company: (1) identify its IP assets, and (2) assign a justifiable value to the identified IP assets,

both of which require careful consideration. A company may possess various types of assets that qualify as IP. By its very nature, IP comprises intangible assets that are not as readily identifiable as a company's tangible assets (e.g., buildings, equipment, etc.). In some instances, IP rights are embodied in a granting document, such as an issued patent or a registered trademark. In those instances, the IP assets may be more easily identified by the company. For instance, companies are typically able to identify such IP assets as issued patents assigned to the company, registered trademarks owned by the company, and registered copyrights owned by the company. Also, IP rights that are licensed or purchased from a third-party are generally identifiable to the company because of the existence of a granting document (e.g., contract) between the company and the third-party.

¶ 4 Other assets that may qualify as a company's IP may be easily overlooked. Consider the following examples of potential IP assets that a company may possess: (1) information maintained in notebooks and/or stored on a computer by engineers or other employees, (2) a pending patent application assigned to the company, (3) an invention disclosure from an engineer to company decision-makers for consideration as to whether to pursue patent protection, and (4) proprietary software source code developed in-house.

¶ 5 Certain types of IP may not be embodied in a granting document. Indeed, certain types of intellectual property owned by a company may not even confer any enforceable rights. For instance, a pending patent application assigned to a company confers no enforceable rights to the company until the patent issues, if ever. Thus, the pending patent application is an asset representing a potentially enforceable right that may be conferred to the company in the future.

¶ 6 Given that a pending patent application confers no enforceable rights, is the pending patent application an "asset" of the company? Most would likely agree that a company's pending patent application is an asset, even though it does not confer any enforceable rights. The pending patent application not only provides the company with the present value of being able to mark its products that include features encompassed by the patent application with "Patent Pending," but it also provides the company with potentially enforceable rights in the future, should the patent issue. Further, if the company were to be acquired by another, some value would certainly be attributed to its pending patent applications as company "assets" in determining a fair purchase price for acquiring the company.

¶ 7 Consider now information that is maintained in a laboratory notebook by an engineer of the company. Often engineers record their thoughts in notebooks. Indeed, many companies encourage

this practice because of the notebooks' evidentiary value should an issue of inventorship later arise. The notebooks are generally considered company property and remain with the company if the engineer's employment is terminated. The notebook itself likely confers no enforceable rights to the company (although trade secrets may be described in the notebook). Typically, the officers of a company are not aware of the information contained in an engineer's notebook. Accordingly, while a potentially valuable invention may be described in the notebook, only the engineer who authored the notebook may be aware of the information included therein.

¶ 8 Thus, the question arises: is the engineer's laboratory notebook an "asset" of the company? If a company does not permit its employees to take information with them when they depart, it is likely because maintaining such information is of value to the company and may therefore qualify as an asset. However, valuing this type of asset is problematic because, as mentioned above, officers of the company may not even be aware of the information it includes. Further, if the company were to be acquired, no value may be attributed to the engineer's notebook in determining a fair purchase price for acquiring the company because the notebook's content may be largely unknown. Consequently, a company may possess a vast amount of IP, some of which is readily identifiable and others of which are difficult to identify. In such a situation, how can the company's officers be confident that they are aware of *all* of the company's IP assets?

¶ 9 One solution is to perform an IP audit. A comprehensive IP audit generally includes an evaluation of a company's assets to identify its IP assets that it possesses. For instance, an IP audit identifies such IP assets as the company's issued patents, registered trademarks, registered copyrights, and trade secrets. Such an audit also identifies IP assets acquired or licensed from third-parties. Further, an IP audit identifies IP possessed by the company that does not confer presently enforceable rights, such as pending patent and trademark applications and inventions disclosed to the company's decision-making personnel for which a patent application has not been filed. The IP audit may further evaluate the company's process of collecting IP assets. For instance, a company may have procedures in place to encourage its employees to disclose their inventions to the company. As mentioned above, information included in an engineer's laboratory notebook may be unknown to the company's decision-makers, and thus procedures for encouraging engineers to disclose valuable information to the decision-makers may be important for assuring that the company is aware of its potential IP assets.

¶ 10 An IP audit may also include an evaluation of the

procedures in place at the company for maintaining the company's IP assets. For example, most countries require companies to pay periodic fees to maintain patents in force. Similarly, intellectual property rights licensed from third-parties may require periodic payments to be made to the third-parties. Thus, an IP audit may evaluate the company's procedures for ensuring payments for maintaining the company's IP assets in force. Further, employee and consultant agreements may be evaluated to ensure that the IP developed for the company is owned by the company and to ensure that the company has safeguards in place to prevent unauthorized disclosure of proprietary information (e.g., trade secrets).

¶ 11     Additionally, an IP audit may include an evaluation of the company's procedures for avoiding unauthorized use of the intellectual property rights of others. For example, the IP audit may include a review of the company's process for introducing new products and services, such as the company's procedures for assuring that valid intellectual property rights of others are not infringed by an introduced product or service.

¶ 12     Companies typically conduct annual audits of their financial status, and public companies include the auditor's statement of their financial condition in annual shareholder reports. Similarly, an annual IP audit is an advisable aspect of assessing the company's financial status. That is, an annual IP audit may serve to assure the company's officers that the company's IP assets have likely been identified for assessing the company's financial condition. Several texts that address various aspects of performing effective IP audits in greater detail are available.<sup>3</sup>

¶ 13     Once a company identifies its IP assets, it becomes desirable to assign a justifiable value to those assets. One study reported that while in 1978 only twenty percent of corporate assets were intangible assets, and eighty percent of corporate assets were tangible assets, by 1997 the relative value of tangible and intangible assets had practically reversed, with seventy-three percent of corporate assets being intangible assets.<sup>4</sup> Thus, for many companies, the valuation of their IP assets is a critical factor in determining their financial condition.

¶ 14     Valuing IP assets is often a difficult task because their true value may not be readily apparent. It is often desirable to tie the value of an IP asset to income directly attributable to that asset, if determinable. For instance, the value of a patent may be determined by the revenue stream derived from licensing the patent rights to others. However, is an unlicensed patent worthless? It does provide a negative right that is enforceable by the owner. The company has spent money acquiring this patent right and pays fees to maintain the patent right - so, can the company justify acquiring and maintaining a patent that it deems

to be of no value?

¶ 15 Of course, the value of an IP asset may not be recognized in income received by the company. Indeed, the full value of an IP asset is likely never recognized in income because much of the asset's value resides in the negative right to prevent others from doing something they would otherwise be permitted to do. Thus, a patent may have great value even if the company does not license the patent or enforce the patent against any third-party because the company possesses "the right" to prevent others from practicing the patented invention. For example, potential competitors may decide not to embark on a field encompassed by the company's patent rights. In such a situation, while the company may not recognize revenue by way of a license, it may achieve greater market share as a result of the patent deterring others from offering a competitive product or service. Further, a company's patent portfolio may serve as a defensive mechanism that makes third-parties cautious about enforcing their intellectual property rights against the company for fear of retaliation by the company with its patent portfolio. In this regard, the company's patent portfolio may have great value in allowing the company to proceed with its business undisturbed, without threats of infringement that might otherwise be raised by third-parties. Accordingly, the true value of intellectual property assets is generally difficult to measure, and even though accepted techniques are available for assigning a value to those assets (as discussed further below), the full value of intellectual property assets is likely not captured with those valuation techniques.

¶ 16 Valuing an IP asset is further complicated because such value is generally not stagnant. Rather, the value of an IP asset often changes over time. Consequently, a company should periodically (e.g., annually) re-assess the value of its IP assets. To illustrate the dynamic nature of an IP asset, consider the following examples. Suppose "Company A" invents a new device for slicing bread that allows the bread to be sliced immediately after being baked at a time when the bread is too soft for proper slicing by traditional bread slicers. Four scenarios are presented below to demonstrate situations in which the value attributed to Company A's intellectual property in its new bread slicer changes over time.

¶ 17 Scenario 1: Company A files a patent application for its invention with very broad claims. Thinking this invention is the greatest thing since sliced bread, Company A assigns substantial value to the pending patent application. However, during prosecution of the patent application, a prior reference is discovered that discloses the company's bread slicer and renders the "invention" unpatentable. Thus, the patent application loses its value because the application will not issue as a patent that provides enforceable rights to Company A. However, there may

still be IP value remaining in Company A's bread slicer. Suppose, for instance, that Company A is a bakery and its profits have skyrocketed since being able to offer freshly sliced bread. Further, suppose that the patent application was not published and the company has not otherwise disclosed the bread slicer, the bread slicer may have value as a trade secret of Company A.

¶ 18     Scenario 2: Company A files a patent application on its bread slicer invention with very broad claims. Again thinking that the invention is the greatest thing since sliced bread, Company A assigns great value to the patent application. However, during prosecution of the patent application, the claims are greatly narrowed for various reasons, and a patent will issue with much narrower claims than originally anticipated. That is, the issued patent provides a much narrower scope of protection than was initially anticipated by Company A when filing the patent application.

¶ 19     The issued patent should, in theory, be more valuable than was the pending patent application because the company now has actual, enforceable rights whereas the pending patent application provided no enforceable rights. However, the claims of the issued patent are much narrower than was anticipated when valuing the patent application. Thus, it may be difficult to determine the proper value to assign to the issued patent.

¶ 20     Scenario 3: Company A files a patent application on its bread slicer invention with very broad claims, and Company A assigns great value to the patent application. The patent issues with the very broad claims. However, the invention becomes of little interest to competitors. No third-parties are interested in licensing the patent rights. Thus, the patent produces no income stream for Company A. An infringer is identified by Company A, but it is deemed by corporate management to be unworthy of the attorney expenses and/or risk of provoking return action to take action enforcing the patent against the infringer. If the patent is not worth enforcing, is it worthless? As mentioned above, the patent may have value beyond any income stream that it generates through licensing and beyond its enforcement against infringers. For instance, the patent may serve as a deterrent to make third-parties cautious about taking action against Company A, regardless if it is actually enforced.

¶ 21     Scenario 4: Company A files a patent application on its bread slicer invention with very broad claims. Again thinking that the invention is the greatest thing since sliced bread, Company A assigns great value to the patent application. The patent issues with the very broad claims. However, by the time the patent issues or shortly thereafter, the invention has become "stale". That is, the next greatest bread slicer, which is not covered by the claims of Company A's patent, has swept the market, and virtually no one is

interested in the patent rights owned by Company A. In fact, Company A may seek to license the next greatest bread slicer from a third-party in order to keep pace with its competition. Alternatively, in some situations, the issued patent rights may be of interest to others only after a relatively long period of time (e.g., 12 years after the patent issues). Thus, Company A's patent rights may, in actuality, be of relatively little value for many years, and may then become very valuable.

¶22 In each of the above scenarios, the value of Company A's intellectual property rights in its bread slicer changed over time. Thus, an IP valuation process should be ongoing to recognize changes in the value of a company's IP asset. Recognizing the above difficulties in valuing intellectual property, economists have traditionally utilized at least one of the following methodologies to derive a value for an IP asset:

- (1) Market Approach. The Market Approach measures the present value of future benefits by obtaining a consensus of what others in the marketplace have judged the value to be. This approach is similar to how comparable properties are used in real estate valuations, wherein the IP asset is compared to similar IP assets of others and valued accordingly.
- (2) Cost Approach. The Cost Approach seeks to measure the future benefits of ownership by quantifying the amount of money that would be required to replace the future service capability of the subject property (i.e., "cost of replacement" of the IP asset). The assumption behind this approach is that the price of acquiring the IP asset is commensurate with the economic value of the service that the asset provides during its enforceable lifetime. While this approach is certainly not always accurate, it may average out over a relatively large portfolio of IP assets.
- (3) Income Approach. This approach focuses on the income-producing capability of the IP asset. The underlying theory is that the value of the IP asset can be measured by the present worth of the net economic benefit (cash receipts less cash outlays) to be received over the enforceable life of the asset.
- (4) Twenty-five Percent (25%) Rule. This is a technique commonly used in the valuation of patents and technology. With this technique, the IP asset's value is calculated as twenty-five percent of the gross profit, before taxes, from the

companies' operation in which the asset is used.<sup>5</sup>

¶23 While each of the above valuation techniques likely fail to capture the full value of an IP asset, its use should provide comfort to a company's officers that they have reasonably valued the company's IP assets in assessing the company's financial condition. As the reporting of a company's financial condition continues to be more closely scrutinized, the valuation of IP assets becomes increasingly important, particularly if much of the company's financial value resides in its IP assets. Accordingly, companies are well-advised to develop a strategy for periodically identifying and valuing their IP.

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#### ENDNOTES

\* Jody C. Bishop is a senior associate who focuses his practice on intellectual property and technology matters at Fulbright & Jaworski L.L.P. in Dallas, Texas. Mr. Bishop received a B.S. in computer systems engineering in 1995 and a J.D., cum laude, in 1998 from the University of Arkansas.

<sup>1</sup>Sarbanes-Oxley Act of 2002, 15 U.S.C.A. § 7241 (2002).

<sup>2</sup>Section 302(a) of Sarbanes-Oxley provides:

Regulations Required. - - The Commission shall, by rule, require, for each company filing periodic reports under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m, 78o(d)), that the principal executive officer or officers and the principal financial officer or officers, or persons performing similar functions, certify in each annual or quarterly report filed or submitted under either such section of such Act that —

- (1) the signing officer has reviewed the report;
- (2) based on the officer's knowledge, the report does not contain any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements made, in light of the circumstances under which such statements were made, not misleading;
- (3) based on such officer's knowledge, the financial statements, and other financial information included in the report, fairly present in all material respects the financial condition and results of operations of the issuer as of, and for, the periods presented in the

report;

(4) the signing officers —

- (A) are responsible for establishing and maintaining internal controls;
- (B) have designed such internal controls to ensure that material information relating to the issuer and its consolidated subsidiaries is made known to such officers by others within those entities, particularly during the period in which the periodic reports are being prepared;
- (C) have evaluated the effectiveness of the issuer's internal controls as of a date within 90 days prior to the report; and
- (D) have presented in the report their conclusions about the effectiveness of their internal controls based on their evaluation as of that date.

<sup>3</sup>See, e.g., BUSINESS LAWS, INC., CORPORATE COUNSEL'S GUIDE TO INTELLECTUAL PROPERTY AUDITS (1996).

<sup>4</sup>Kenneth E. Krosin, *Management of IP Assets*, AIPLA BULLETIN 176 (2000 Mid-Winter Meeting Issue).

<sup>5</sup>Many texts are available on the topic of valuing intellectual property that provide greater detail about the above valuation techniques, as well as other accepted techniques for valuing intellectual property. See, e.g., LICENSING EXECUTIVES SOCIETY INTERNATIONAL, INC., THE LESI GUIDE TO LICENSING BEST PRACTICES: STRATEGIC ISSUES AND CONTEMPORARY REALITIES (Robert Goldscheider ed., 2002); GREGORY J. BATTERSBY & CHARLES W. GRIMES, LICENSING ROYALTY RATES (2002).



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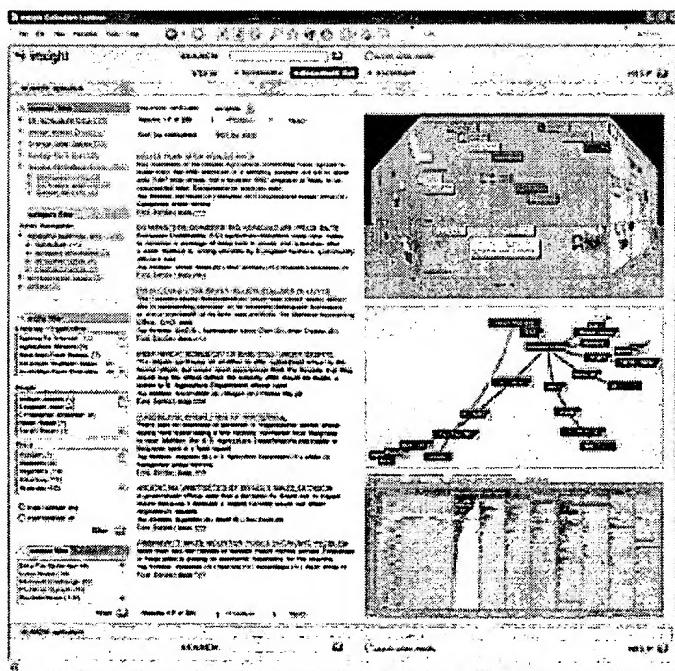
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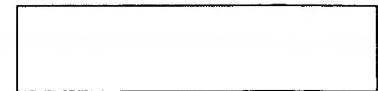
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**Last Published Application Number Publication Date: September 2, 2004**  
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5,811,688	Open channel flowmeter utilizing surface velocity and lookdown level devices	9/22/1998	9/22/2015	Yes	\$8,791,812.29	\$4,015,871.50
5,644,088	Port forward sensor for liquid level gauge or flowmeter	7/1/1997	7/27/2015	Yes	\$730,408.80	\$331,970.36
5,544,531	Flowmeter having active temperature compensation	8/13/1996	8/13/2013	Yes	\$1,015,140.61	\$426,713.41
5,398,552	Magnetic flowmeter having a separable magnetic assembly	3/21/1995	3/21/2012	Yes	\$368,619.21	\$143,729.58
5,263,374	Flowmeter with concentrically arranged electromagnetic field	11/23/1993	11/23/2010	Yes	\$765,313.94	\$271,960.40
4,459,858	Flow meter having an electromagnetic sensor probe	7/17/1984	7/17/2001	Yes	\$576,640.03	\$0.00
4,015,471	Spherical electromagnetic water current velocity sensor with protruding electrodes	4/5/1977	4/5/1994	Yes	\$637,879.18	\$0.00
5,684,250	Self-calibrating open-channel flowmeter	11/4/1997	8/21/2015	Yes	\$3,268,761.49	\$1,488,911.20
5,594,179	Tracer type flowmeter and method using two or more injected trace materials	1/14/1997	11/6/2015	Yes	\$2,877,857.76	\$1,319,698.60
5,421,211	Liquid flowmeter including doppler signal processing, and method	6/6/1995	6/6/2012	Yes	\$730,958.34	\$288,803.95
5,385,056	Pump station flowmeter	1/31/1995	1/31/2012	Yes	\$180,265.23	\$69,680.35
4,549,434	Pressure level sensor	10/29/1985	10/29/2002	Yes	\$488,755.14	\$0.00
4,083,246	Fluid flow meter	4/11/1978	4/11/1995	Yes	\$1,618,972.70	\$0.00

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If you can't see it, then it doesn't exist. Suppose science successfully perpetrated that medieval philosophy and we never accepted the existence of neutrons, protons, electrons, germs, bacteria, viruses or DNA. Today's science would not exist and we would still be living in the dark ages. Just as with physical science, economic science and theories have evolved as the world in which we live continues to change.

[Patent Valuation from a Practical View Point, and Some Interesting Patent Value Statistics from the PatentValuePredictor Model](#)

My colleague Grover Rutter (see his article in this edition) has presented an excellent review of how to treat patents from a financial and tax reporting standpoint. However, how do you determine the real value of a patent? That begs the question: What factors are relevant to the real value of a patent? You have to know what factors into a valuation before you can address the valuation issue. Let's start with some definitions, and then address this issue. After that, lets look at the PatentValuePredictor model and some actual valuation data and trends provided by the model.

[A Macro-Economic Model Providing Patent Valuation and Patent Based Company Financial Indicators](#)

A new and useful macro economic model for valuing patents is presented. The model provides equations predicting the market share for products and services covered by a patent. One benefit of the macro economic model is that it enables inexpensive automated determination of the value of any patent. One drawback of the macro economic model is its reliance on a nominal determination of market share. However, the reliance upon a nominal determination of market share obviates data defining the actual market and actual sales covered by the patent, and that twist is what makes the model feasible to implement!

[A Macro-Economic Model Validating Patent Based Company Financial](#)

### Indicators and Automated Patent Valuations

I developed a macro economic model for automatically valuing patents, which is presented elsewhere. In this paper, I present some individual automated patent valuations and company-wide automated patent portfolio valuations resulting from the model (sections II and III), summarize the model (section IV), correlate results from the model for company-wide patent portfolios to market capitalizations of publicly traded companies and explain why those correlations show that certain basic assumptions of the model are valid (sections V and VI), discuss validating the model's individual automated patent valuations (section VII), and draw certain conclusions (section VIII).

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